DOMESTIC ENGINEERING

A Weekly Record of Progress in Plumbing, Heating, Ventilation and all Matters Pertaining to Domestic Sanitation

ESTABLISHED 1889

Whole No. 1094 | CHICAGO, NOVEMBER 29, 1913 | Vol. 65, No. 9

PUBLISHED ON SATURDAY OF EACH WEEK BY THE

DOMESTIC ENGINEERING COMPANY

445-447 Plymouth Court, Chicago.

Long Distance Telephone: Harrison 951.

Eastern Office, 200 Fifth Ave., New York City. Tel. Gramercy 4897.

F. S. KENFIELD, Pres. F. P. KEENEY, Treas. and Manager.
E. DE FOREST WINSLOW, Vice-pres. O. T. CARSON, Secretary.

EDITORIAL STAFF.

W. E. MARQUAM, Managing Editor. JOSEPH GRAHAM, Technical Editor.
R. HERLOV, C. L. DAVIS, Associate Editors.

ADVERTISING REPRESENTATIVES.

O. T. CARSON.....Western Representative
E. DE FOREST WINSLOW.....Eastern Representative

TERMS OF SUBSCRIPTION.

United States, Cuba and Mexico, $2.00 per year.
Canada, $3.00 per year. Foreign, $4.00 per year.
Current copies, 10c each. Back numbers, 25c each.

Entered as Second-Class Matter at the Postoffice at Chicago, Ill.

The Editor is pleased to consider articles and photographs for publication, but can only use material that is of interest to "Domestic Engineering" readers. Unsolicited manuscripts will not be returned unless sufficient postage is sent. Technical questions will only be answered in the "Questions and Answers" column, in the order in which they are received.

AS A MEANS TO AN END.

THERE'S something to be said for the man who, in spite of the close competition in the plumbing and heating business in most parts of the country, is able to lay aside a competence for the days when 'tis all looking backward, and hope has given way to retrospect.

We have in mind just now a man whose effort all along has been to do enough business to make a living and a competence. The plumbing and heating business is a means to an end.

To attain this end he insists that every job pay him a satisfactory profit. Not a single piece of work is figured if there is doubt as to the outcome in dollars and cents.

As a consequence of this policy, this man's business is not the largest in his community. There are several of his competitors who do five to ten times his total business.

This man has been in business more than thirty years. He owns his own building, having occupied a flat above it for several years after it was built.

The business community has learned to depend on this man's word, and on his judgment in matters of sanitation. He has gone on in the even tenor of his way until he has commanded the respect of everyone.

He has not overloaded himself with detail, but has rather thrown this over to his partner, who until recently was his bookkeeper and office man.

Instead of putting back into the business every cent he could make, he has invested his money in good business rental property, vacant residence sites and old-line life insurance, until today he has the standing of a capitalist in his community.

Each year he takes time for a month's vacation and quite often in the winter takes a southern trip.

He can be seen almost any nice evening riding with his wife in their electric runabout enjoying life in a quiet, unostentatious way.

This man has made a success by looking **beyond** his business. He has been **above** his business—has **run** his business for the ultimate good of himself and family.

No, his business would not be called a big one, though it has grown steadily with the years. He has not striven for **bigness,** but for **profit.**

How many men in the trade today are looking at their business as a means to an end? How many are figuring to **live** along life's pathway, in a manner sane and wholesome?

There's room in every community for a master plumber and steamfitter who has the backbone to refuse business that does not show a profit. This man has made a success in a way that is not unusual—but is perhaps the exception rather than the rule.

When business becomes a means to an end, rather than the end itself, then will the American people become the sane race that they should be, and that today in many respects they are not. Let us hope that that day will soon come.

Heating a New England House With Steam

Third Article—Further Discussion of Methods of Figuring Radiation—The Installation of the Boiler—Connecting Up the Job

By EDWARD RICHMOND PIERCE

WE are now ready to understandingly figure for the amount of radiation that will be required in each room, and then to properly size the piping that is to carry the steam to each radiator.

Of course, all my readers will understand that in this article an immense amount of detail is being given that would never enter into the ordinary work of figuring up a heating job, for the reason that all these things have been reduced to simple forms that can be quickly used. But, to use those rules with intelligence the user should certainly know *why* the different factors of any rule was put in the form it is in. Unless he knows that, he certainly can not know whether the rule is applicable to the particular job under consideration. How many fitters who use the 2-20-200 rule can tell themselves, or any one else, why that rule is approximately correct when applied to a room 15x15x10 with one wall exposed, and one window 4x7½ ft. and entirely incorrect when applied to a room of the same inside dimensions, but with three walls exposed, and having three windows of 30 sq. ft each, three column cast iron radiators being used?

How many can tell what percentage of surface would be required if single pipe wrought iron radiators 38 inches high were used, and why? These are but the beginning of questions that the two rooms might call up for answer. The day is not far distant when men who pretend to be steam fitters will have to pass a rigid examination in order to secure a license, and simple questions like the above will have to be answered with some degree of accuracy.

It is in preparation for that day that it is worth while to enter into all the detail possible as to why things are done, when a simple house job is illustrated in your trade paper.

The following table gives the data as to the amount of radiator surface required in the various rooms. This surface is in some of the rooms placed in two radiators in order to distribute the heat more quickly and evenly.

Room Number	Required Temp. of Room when Zero Outside. Fahrenheit	Loss of Heat in B. t. u. per Hour from the Room	Kind of Cast Iron Rad. Used in Room	Heating Value Per Sq. Ft. Rated Surface Per Hour	Sq. Ft. Radiator Required in Room
1	70	21.177	3 Column	220.8	95
2	70	16.177	"	220.8	85†
3	70	9.103	"	220.8	40
4	70	10.480	Flue Rad.	207	84*
5	70	5.126	3 Column	220.8	25
6	70	12.665	"	220.8	60
7	70	14.763	"	220.8	70
8	70	17.319	"	220.8	80
9	70	8.547	"	220.8	35
10	70	14.653	"	220.8	75†
11	70	9.250	Flue Rad.	207	77*
12	80	8.221	3 Column	204.8**	40
13	65	8.635	"	228.8**	35
14	65	7.287	"	228.8**	35†
		163.403 B. t. u.			836

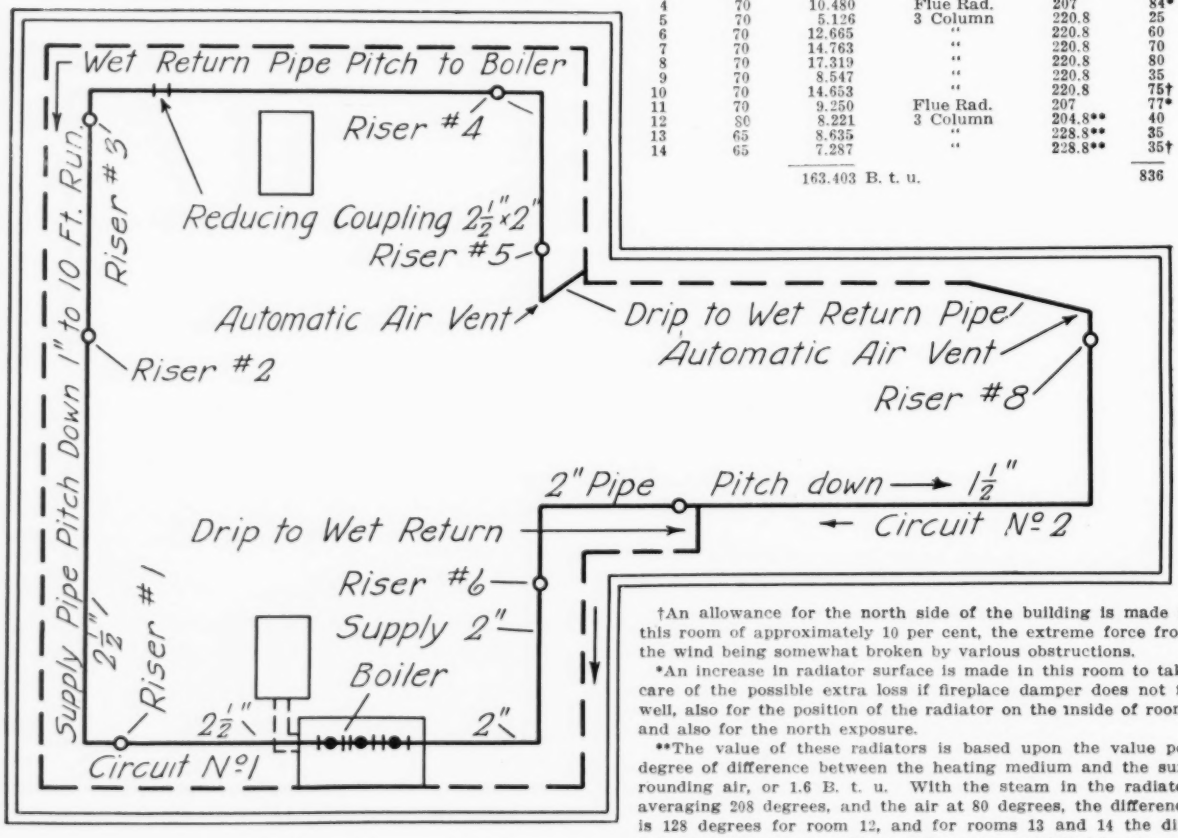


Fig. 3.

†An allowance for the north side of the building is made in this room of approximately 10 per cent, the extreme force from the wind being somewhat broken by various obstructions.

*An increase in radiator surface is made in this room to take care of the possible extra loss if fireplace damper does not fit well, also for the position of the radiator on the inside of room, and also for the north exposure.

**The value of these radiators is based upon the value per degree of difference between the heating medium and the surrounding air, or 1.6 B. t. u. With the steam in the radiator averaging 208 degrees, and the air at 80 degrees, the difference is 128 degrees for room 12, and for rooms 13 and 14 the difference is 143 degrees. These differences, multiplied by the 1.6, give the working value of the radiator surface.

Now, as to the pipe size that should be used for this job. How shall we find out what size to use, and also why we use that instead of some other size?

While there seems to be plenty of radiation provided, (it probably seems extra large to the majority of fitters who have been in the habit of using a short cut rule, and carrying up to 5 lb. steam at zero in order to secure results), but bear in mind we are working out the problem forced on us by the present conditions which require results at zero weather with only two pounds of steam at the boiler, *not 2 lb. in the radiators.* And we are proposing to use 3 column cast iron radiation, not pipe radiators. Given 2 lb. pressure of steam *in* the radiators and using 2 column radiators and the square feet of radiation will show very considerably less in the square feet of surface required.

One pound of steam gives up its latent heat in condensing, at the rate of approximately 965 B. t. u. We have found that we require 163.403 B. t. u. per hour to replace the loss of heat per hour. Then 163.403÷965 will show that we require 169⅓ pounds of steam per hour. But in providing the radiators, some additional surface beyond exact estimated needs had to be used, so that approximately the 836 square feet of radiation will condense 190 pounds per hour. At the temperature of the steam at the boiler each pound will occupy 26.4 cubic feet of space, therefore, we will require 5,016 cubic feet of steam per hour, or 1.4 cubic feet per second. (5.016 ÷3,600 [sec. per hour]=1.39+.)

We are now in a position to start the main pipe. But can we safely use any of the different sizes that are called for by various writers? If so, which one? It is evident that to deliver 1.4 cubic feet of steam per second a great variety of sizes of pipe can be used, but here comes in the difficulty presented by the new rating that the manufacturers have placed on their boilers, and the limitations of modern specifications that the job must perform its full duty with only two pounds pressure. That means that we must keep to a rather low velocity which means of course larger pipe.

As a matter of fact, with only two pounds pressure at the boiler it would be an exceptionally short and frictionless run where a velocity of more than 40 feet per second for the steam in the pipes could be obtained.

Suppose we assume, for a trial, that the steam shall travel 35 feet per second. Then, as 1.4 cubic feet must pass in one second we divide 1.4 cubic feet by the assumed velocity of 35 feet per second and find that we need an area of .04 square foot. As there are 144 square inches in one square foot, and we need four-one hundredths of it, we multiply 144 by .04 and find we must have at least 5¾ square inches area. The nearest commercial sized pipe is a 3 inch pipe. As there is in this case plenty of head room in the cellar we could use the 3 in. main to start with. But, suppose the head room was scant, so that there was danger of trouble with the water line in case 5 or 10 pounds pressure was developed. In that case a slower velocity must be used so that the drop in pressure would be very small, and not greater than 25 feet velocity per second could be used. Then 1.4 divided by 25 equals .056 of a square ft., or an area of 8.06 square inches, calling for a 3½ inch main to start with.

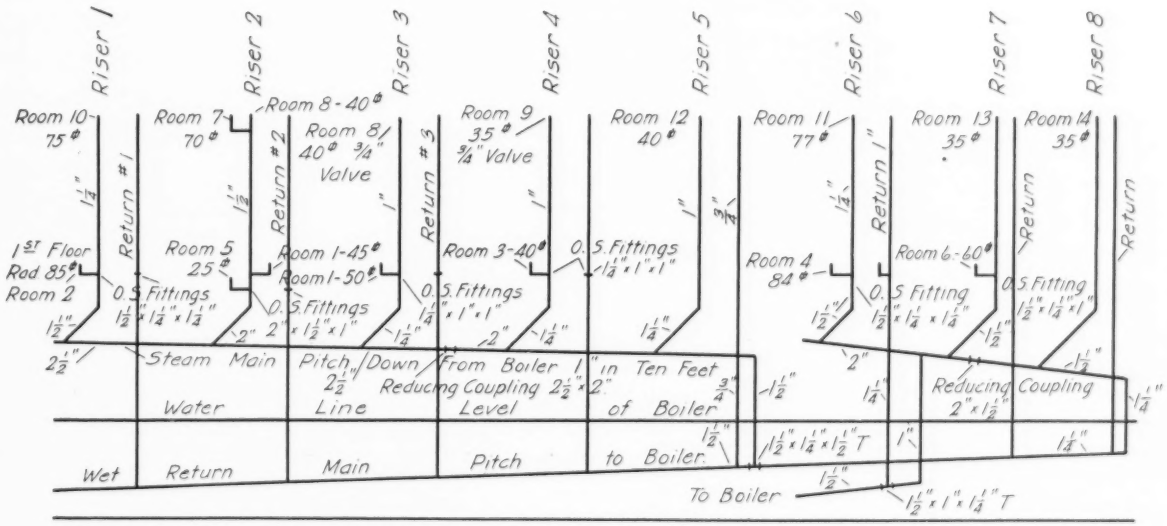
Taking 10 pounds pressure at the boiler, a velocity of 75 feet per second can be easily secured. Then, it will be found that with that velocity, the lowest part of the steam supply main must be at least from two to three feet higher than the water line on the boiler, at the point where the drop to below water line should be made, but it would be possible to work a 2 inch main.

With 5 lb. pressure in the radiators a velocity of 55 to 60 feet per second will be secured and a 2½-in. pipe would be the correct size to use for a starting pipe.

To any one who will get the foregoing clear explanations of *why* certain pipe sizes are used and what the results of using a given size will have on his pressure at the boiler, there will never be many mistakes in his pipe sizing for two pipe work. The return pipes, as a rule, should be one size smaller than the supply pipe.

The plan Fig. 3 shows how the pipe for this job as described should be run. The plan Fig. 4 shows the riser plan.

The whole of this pipe question is reduced to a table



All Pipes From Mains To Risers, Pitch Up From Main To Riser. Use 45° And Double Pitched Ells For These Connections.

Fig. 4.

in Pierce's Practical Manual of Steam and Hot-Water Heating, page 129. This table could easily be memorized in a few moment's time. I assume, however, that men wish to know why, otherwise they never would know how to locate troubles that come from improper piping.

The great importance of piping methods is shown by the great amount of space recent writers give to it. Prof. Carpenter devotes over 30 pages of his book to pipe and fittings. Pierce's Manual has over 45 pages on the steam piping question and about 30 more on piping for hot water heating or 75 pages all told. Prof. Allen gives about 60 pages to the question. These three books so completely explain every phase of the piping question that there is no valid excuse for the poor piping that is being done in house work all over the country.

Alfred G. King has written an excellent book on Heating recently. Prof. Kent's and Prof. J. D. Hoffman's Handbooks for Heating and Ventilating Engineers should be found in the library of Steam Fitters who have mastered the rudimental portion of the business as developed in ordinary house heating, and the smallest fitter in the country can supply himself with text books for less han the wage he pays per week to a mechanic.

This heating business has graduated from the guess work class within the past ten years and the plums are now going to the men who KNOW WHY they do things in a certain way. It is up to each man in the business to get busy and learn why, himself, or find himself left in the rear of the procession.

As we must keep within the rated capacity of 2 lb. pressure at the boiler, not 2 lb. in the radiators, it will at once be evident that a velocity of not more than 30 feet per second can be maintained.

If we could carry 5 lb. *in the radiators* we could expect to secure 75 or more feet per second velocity and so could deliver a much greater quantity of steam to each radiator in an hour as well as steam of greater heating capacity, and could use smaller pipe.

We decide to use the chimney on the north side and to put in two circuits so as to use smaller pipe sizes. We have found that if we run only one circuit that we must use probably a 3½ inch pipe so we put 545 square feet on one circuit, and 291 on the other.

The 545 square feet of 3 column cast iron radiators under conditions named will yield 220 B. t. u. per square ft. per hour, or 119,900 B. t. u. This equals 124 lb. steam, or 3,273.6 cubic feet per hour, or 0.9 cubic ft. per second. (119.900÷965=124: 124×26.4=3,273.6: 3,273.6÷3,600=0.9: 0.9÷30=.03: 144×.03=4.32.) This requires an area, without counting friction, of 432 square inches. The nearest commercial size of pipe to this area is a 2½ inch, which has 4.784 square inches actual area. (See page 157 Pierce's Manual). This additional area will provide for the additional friction of fittings. In the same way we proceed to find that a 2 in. pipe will be required for the 291 square feet, and also at what point the 2½ pipe can be reduced, and to what size, in order to hold to the same velocity, approximately throughout the job.

All the important reasons for using certain sizes of pipe and radiators have been carefully explained in the foregoing when 2 lb. pressure at boiler is to be carried; the only difference in procedure for other pressures usually carried in house jobs, will be the difference in the figures in the Steam Tables for other pressures, and the difference in the value of radiator surface that may be used. Whether 1-2 or 4 column.

The News Item in the Newspaper.

Much has been said in "Domestic Engineering" about the use of publicity in newspapers. It has seemed to some of our readers, no doubt, that undue importance has been given to this subject.

That actual results can be secured by a little tact in this direction has been amply demonstrated.

Big Contract Secured

Heating and Plumbing Firm Active in Work on Big Jobs.

Hineline & Co. have secured several big contracts for plumbing equipment and its installation during the past few months. Chief among these is the contract for the equipment and installation of same at the Hennepin flat building, 1225-1229 Hennepin avenue. The work on this job has already started and will be completed about the middle of November.

Another contract for all the plumbing work in connection with a 13-family building at 1816-1826 Fifth street south has been secured recently. In addition to these contracts there are several that are pending for work in various parts of the Northwest. One especially has been secured, save for the settlement of a few details, that will be one of the biggest jobs of its kind in the Northwest when completed.

"People are beginning to realize it pays to install the best line of plumbing obtainable, and you would be surprised at the number of jobs that we have secured where our price was actually higher than our competitors," said Mr. H. C. Miller of Hineline & Co. 'A good grade of plumbing will last a lifetime, and will save the constant annoyance of repairs and the ensuing of bills. People realize that home building has become a science and that the plumbing and heating is a big part of that science."

Herewith is reproduced an article taken from one of the large western dailies, the Minneapolis Tribune. The article is one of news alone, yet possesses a value as advertising that cannot be overestimated. And above all, it did not cost the plumbing firm mentioned a red cent.

Is there any reason why you cannot occasionally furnish your local papers news that will not in any way do them harm, and that will redound to your benefit?

If you have not yet sent us your report for our New Year's Number, please do it now! Let us have your message by next mail. What was your best contract in 1913? What are your prospects for 1914?

Business Methods for the Plumber and Fitter

V.—The Estimate Book—More About Estimating Methods, With Definite Suggestions for the Handling of This Part of the Business

By WESLEY A. FINK

ESTIMATE and cost blanks, careful bookkeeping, regular billing of accounts, prompt service and equally prompt collection of accounts are the chief elements which constitute successful business management.

The manager who a few years ago would traffic and barter with a customer over a price and then accept the best offer he could get, are becoming scarce. The manager who knows his business does not do this nowadays. Every good manager now takes time to make his estimates, and being fortified with a full knowledge of his costs and the price he should charge for his work, is determined to make a success of his establishment.

It is a well-known axiom that no plumber can name a price so low or ridiculous that his customer cannot by shopping and the tricks known to contractors or buyers of so-called cheap plumbing, get a lower one. By hinting of close prices and future work the wily contractor can often secure prices more than ten per cent below the actual cost of doing work. Therefore, plumbers everywhere should eliminate this robbery of themselves, their families and their creditors and ask a fair price—one containing all the costs and a fair profit—for their work and compete in quality and service.

But before you attempt to get more for your work, you must know whether you are entitled to it or not. And there is no other way to determine accurately than through proper cost accounting methods.

The estimate book demands first attention, not only on account of its importance, but further, because it may be said to be the "book of first entry."

One of the worst habits an estimator can get into is that of figuring roughly on any old piece of paper that may be handy, and either destroying it or sticking it on a file where it will not be easy to find when wanted. Always make your estimates upon regular estimate blanks, so they will act as a jog to your memory as you come to each item. Do this whether alone or with a customer. It will keep you in good habits and will have a beneficial effect upon your customer, besides keeping your estimate file in such shape as to be easy to refer to and preventing disputes when the work is completed.

Estimators often find their greatest danger in forgetting to insert one or more items of the cost, the omission of which is discovered only when the job is completed and the actual cost is computed. So to lessen the danger of such omissions, some heating contractors use a comprehensive estimate sheet as in Fig. 1 and 2.

The successful estimator must remember the jobs upon which he makes prices even after the work is secured, for it is important that every part of the work be done in the manner in which it was intended that it should be done if possible. Hence the value of an itemized estimate sheet showing all the details of an estimate submitted.

.....Owner

.....Architect

.....Builder

Water

Quan.	Items	Price		Quan.	Items	Price	
	Boiler No. rated				Boiler No. . . rated		
	Direct Radiation High				Direct Radiation High		
	" " "				" " "		
	" " "				" " "		
	" " "				" " "		
	" " Wall				" " Wall		
	Indirect Radiation				Indirect Radiation		
	Valves				Valves		
	"				"		
	Union Ells						
	" "						
	Air Valves				Automatic Air Valves		
	No. Exp. Tank, Alt. Gauge, Thermometer				Valves on Mains		
	Generator				Pipe Fittings		
	Valves on Mains				Boiler Covering		
	Pipe Fittings				Pipe Covering		
	Boiler Covering				Bronzing Material		
	Pipe Covering				Smoke Pipe		
	Bronzing Material				Valves for Double Boilers		
	Smoke Pipe				Cold Air Ducts		
	Valves for Double Boilers				Warm Air Ducts		
	Cold Air Ducts				Indirect Boxing		
	Warm Air Ducts				Registers		
	Indirect Boxing				Hangers for Indirect Rads.		
	Registers				Water Supply and Blow-off		
	Hangers for Indirect Rads.				Permits		
	Overflow Pipe				Freight and Cartage		
	Water Supply and Blow-off				Carfares and Incidentals		
	Permits				Board		
	Freight and Cartage				Labor		
	Carfares and Incidentals						
	Board						
	Labor						
	Total				Total		
	Profit				Profit		
	Amt. Bid				Amt. Bid		

Fig. 1. Front Side of Steam and Hot Water Heating Estimate Blank.

Estimate No _____ Date _____

Owner _____ Architect _____ Location _____

Style of Building _____ Front _____ Depth _____ Height _____ Number of Floors _____

Quan.	SEWER AND WATER MAINS: Size	Net Cost	Totals
	Permits: Highway		
	Permits: Sewer		
	Permits: Taps		
	Earthenware Pipe, Fittings and Cement		
	Water Main: Lead or Galv. Pipe		
	Curb Boxes, Stop Cock or Valves		
	Rock Excavating		
	Earth Excavating: Laborers _____ Days		
	Specials		
	Plumber and Helper _____ Days		

GAS PIPE AND FITTINGS

Size	⅛	¼	¾	1	1¼	1½	2	2½	3	4
Wro. Iron Pipe										
Mall. Fitgs. lbs.										
Hooks & Hg'rs										
Lubricating Oils										
Specials										
Gasfitter and Helper _____ Days										

CAST IRON HOUSE DRAIN, SOIL WASTE & VENT LINES

Size	2	3	4	5	6	7	8	9	10
Soil Pipe									
Bends & Long Bends									
Tees, Ty & Y									
Double Ty & Y									
Offsets									
Pigtail & Oakum									
Increasers									
Reducers									
Return Bends									
Cleanouts									
Traps									
Floor Drains									
Hooks & Hangers									
Flashings									
Fuel									
Specials									
Plumbers Helper and Laborers _____ Days									

WRO'T IRON DRAIN, SOIL, WASTE, VENT & REFRIGERATOR LINES

Size	1¼	1½	2	2½	3	4	5	6	8
Wrought Iron Pipe									
90⅝ Ells									
45⅝ Ells									
90⅝ Y's S. & L.									
45⅝ Y									
90⅝ Dble. Y									
45⅝ Dble. Y									
Increasers									
Reducers									
Traps									
Floor Drains									
R & L Cple's & N.									
Special Fittings									
Mall. or Cast Tees									
Mall. or Cast Ells									
Mall. or Crosses									
Flange Unions									
Hangers									
Lubricating Oil									
Refrigerator Lines									
Plumber and Helper _____ Days									

VACUUM SYSTEM

	1	1¼	1½	2	2½	3	4
Wrought Iron Pipe							
Fittings							
Hangers							
Vacuum Machine							
Specials							
Plumber and Helper _____ Days							

FIRE LINES AND EQUIPMENT

Size	2	3	4	5	6	7	8
Wrought Iron Pipe							
Valves							
Check Valves							
Siamese Connection							
Fittings							
Hangers							
Hose Reel & Nozzles							
Specials							
Plumber and Helper _____ Days							

Quan.	Brought Forward	Net Cost	Totals

WATER SUPPLY PIPE AND FITTINGS

Size	½	¾	1	1¼	1½	2	2½	3	4
Galv. Wro. Iron Pipe									
Galv. Fitting lbs.									
Unions									
Hooks & Hangers									
Solder Nipples									
Brass Pipe Iron Pipe Size									
Brass Tubing Iron Pipe Size									
Brass Hangers									
Brass Tees									
Brass Ells									
Brass 45° Ells									
Brass Unions									
Lubricating Oils									
Plumber and Helper _____ Days									

LEAD PIPE, SHEET LEAD, TRAPS, BENDS, FERRULES & NIPPLES

Size	½	¾	1	1¼	1½	2	3	4	5	6
Lead Pipe lbs.										
Lead Bends										
Lead Trap S										
" Traps ½ S										
Lead Ferrules										
Brass Ferrules										
" Solid Nipples										
Brass Vent "										
Sheet Lead lbs.										
Solder lbs.										

VALVES, COCKS AND BIBBS

Size	⅛	½	¾	1	1¼	1½	2	2½	3	4
Gate Valves										
Globe Valves										
Check Valves										
Angle Valves										
Pressure Valves										
Tank Valves										
Comp. Work										
Stops S. & W.										
Fuller Work										
Self Cl'g Work										
Specials										

FIXTURES AND SETTING SAME

Quality	Materials
	Pumps
	Suction or House Tanks
	Water Heaters
	Temperature Regulators
	Storage Tanks
	Copper or Galv. Boilers
	Water Meters
	Water Fillers
	Water Closets—Complete
	Lavatories "
	Bath Tubs "
	Shower Baths "
	Sitz Baths "
	Foot Baths "
	Urinals "
	Laundry Trays "
	Drinking Fountains "
	Pantry Sinks "
	Kitchen Sinks "
	Slop Sinks "
	Grease Traps
	Sewer Ejectors
	Refrigerator Drip Pans
	Specials

Plumber and Helper _____ Days Finishing

Insurance		
Incidental Expenses		
Cartage and Freight		
Car Fare and Board		
Fuel and Oils		
Marble Work		
Slate Work		
Pipe Covering		
Overhead Charge (or Expense Doing Business)		
Net Cost of Estimate		
Percentage of Profit		
Estimate Submitted		

Fig. 3. General Estimate Blank Approved by June Convention of National Association of Master Plumbers.

When the estimated cost has been made and the work installed, the contractor should then check the actual cost with the estimate blanks, which will show where he over-estimated or under-estimated any particular item. An estimate blank should be used by every plumbing and heating contractor. Without such a blank it is impossible to keep track of the work done in the past, and to use it as a guide for the future, whereas if estimate sheets are used as intended to be, they will prove to be an excellent guide for subsequent estimates.

Estimating is as much a science as any analytical laboratory work. It consists in carefully dissecting the specifications or the job into the ultimate units of production, and the farther this dissection is carried into simple acts and motions the more correct will be the estimate. The true principles and practice of estimating includes the analysis of any job of plumbing or heating into its component parts or units and the decision as to the time it should take an average workman to perform the work on each of them, together with the amount of special materials necessary for the work, and the price of each—that is the cost—and the proper amount to add to afford the right profit.

This analytical method is the only correct way of getting at the right price for any piece of work and avoiding errors of judgment in pricing the same, and has long been in use in other lines of engineering and manufacturing, and in recognition of this fact, the estimate blank for plumbers, as is shown in Fig. 3, was presented at the Master Plumbers Convention in Philadelphia, June, 1913. This estimate blank was prepared by a joint committee of the National Association of Master Plumbers and National Association of Master Steam and Hot Water Fitters.

An architect will analyze his buildings down to so many yards of digging, so many perches of stones of such a size and quality, so many pieces of lumber of such and such a size and so on, and write out careful specifications for the guidance of the workmen and make drawings with the dimensions and fittings all marked carefully.

It is just as possible for the plumber to be guided by previous experience as the architect, and just as easy to figure that it will take so long to run a drain from the street sewer, allowing for the nature of the soil to be dug, and depth of sewer; the length of time it takes to erect and test such a length of soil pipe stack; how long it takes to put in the water main, set the kitchen boiler, sink and laundry tub, and make the connections; how long to rough-in the bath room and set up and connect the bath room fixtures, tub, lavatory, water closet, etc. Daily job tickets should be adopted by every plumbing contractor and the workmen should be instructed to keep a separate job ticket for the time and materials used on each part or section of the work.

If the plumber knows that the average time for fitting up a bath room or lavatory of a certain style takes so many days, how easy it would be to figure up how much time it would take to fit up three or four or a dozen bath rooms or lavatories. If every complicated job is reduced to its simple elements, such as so many sinks takes so many days, so many bath rooms so many more days, water main so much, the drain will require so much time, the soil pipe so much, kitchen boiler so much, laundry tub so much, and so on, with each part of the job, how easy it becomes to sum up the total time it will take to complete the job.

Any good cost system should show the average of each unit or section of a job and it then remains for the estimator to decide the length of time which a certain job as a whole will take.

The plumbing business is reducible to a series of basic operations that can be separated from each other and gauged and averaged so that there is a sound basis for calculation as to what may be expected. The knowledge of this basic unit value of each operation constitutes the stock in trade of the good estimator, together with the ability to analyze the proposed work into those units. This has been done in the machinery business and engineering trades for some years, until they have established averages that are so nearly correct as to be safe and they were ready for scientific management and efficiency when they were brought to the front.

(To be continued.)

Burkhart & Weaverson, heating contractors of Portland, Ore., have dissolved partnership.

The Power Specialty Co. has succeeded to the business of E. C. Power, dealer in plumbers' specialties, at Tacoma, Wash.

Leonard Kock and J. W. Wall, of Bisbee, Ariz., who have been in Cleveland, Ohio, for some time arranging for the manufacture on a commercial scale of their Ballcock valve, a patented device, have returned to Bisbee, where they have taken offices and will act as contractors and distributors of the new device.

ROOMS	Wide	Long	High	cu. ft.	Glass	Wall	Total	Water Direct	Rad. Ind.	Steam Direct	Rad. Ind.	No.	Col.	High	Water Tap	Steam Tap	Temp.	

Fig. 2. Back of Steam Heating Estimate Blank.

Water—Its Properties and Practical Uses

XX.—The Whys and Wherefores of the Septic Tank System, With Recommendations for the Installation of Such a Plant

By F. W. TOWER

Septic Tank System.

THE septic tank system promotes putrefaction by means of animal bacteria called "aerobes," which act upon the contents of a sewage tank, or cesspool, and change the conditions of the sludge into a less obnoxious matter.

The most marked feature of the water carriage system is the great dilution which the organic matter undergoes.

The volume of sewage is practically equal to the water consumption.

The waste matter received increases the volume very little, *one* pound in 120 gallons is organic matter, to remove and destroy which is the purpose of the disposal plant.

This *one* pound of organic matter with its 120 gallons of water is all carried by the house drain to a suitable place, the distance from the house varying with conditions, and collected in a chamber called a septic tank.

The size of the tank should be such that its contents may be changed *once* every 8 to 12 hours, that is, its size must be such that the quantity of waste delivered into it would fill it if empty in the stated time.

The temperature of the water is preferably not colder than about 55 degs. F., to favor the conditions for bacterial propagation.

In the complete reduction of sewage by the septic tank method, two forms of bacteria are developed, anaerobic and aerobic.

Air and light retard the multiplication of the *first* of these.

The *second* requires oxygen, air, and the bacteria multiply rapidly in the open air.

These bacteria attack the solid organic matter which is discharged into the first or grit chamber.

After a suitable interval, usually 24 hours, the matter which is considerably liquified overflows into a second, or settling chamber, where light, agitation, and air are absent; this condition rapidly develops the bacteria called anaerobes.

These, not requiring air or light, attack the remaining solids, and rapidly remove all gases and purify the liquid mass to a great extent.

The more complex of these solids are converted into simpler compounds, the ultimate result of the decomposition being the production of ammonia, carbonic acid gas, hydrogen, etc.

The action of the "septic tank" is bacterial, not chemical.

Anything of a metallic nature will not be affected, and such material will have to be taken away occasionally.

It takes some time for bacteria to breed in sufficient numbers to do efficient work, and they should be undisturbed.

Both inlet and outlet of the tank should be arranged to be below the surface of the contents when the tank is full, so that the scum which forms gradually on the surface will not be disturbed by the entrance or outflow of matter.

This scum, resembling wet ashes, helps to retain heat, and excludes light and air from the mass, all favoring the desired result.

The bacteria necessary to the process are always present in abundance in fresh sewage, and no preliminaries are necessary for their operation.

The purification process is somewhat difficult to define, being partly a straining process, but chiefly an oxidizing process of organic matter accomplished through the agency of bacteria.

Warm weather increases the action of the anaerobic bacteria.

No septic tank shows good results when first put in operation, as the bacteria have to be cultivated.

The construction of the septic tank, to be effective, should contain at least three (3) chambers or sections.

The *first* is the grit chamber, where the most important action takes place, and where the bacteria requiring the oxygen of the air, perform their functions, acting upon the organic matter in solution and assist oxidization.

The *second* compartment is the settling chamber where the bacteria do not need air or light to perform their functions to still further liquify the matter and also change it into a gaseous condition.

The *third* section is the discharge chamber from which liquids may be disposed of by several methods such as subsurface drains, irrigation or filtering into a well specially prepared, from which the contents may be pumped.

All the chambers should be water tight.

The object of these successive purifying operations is simply to get the sludge into the form of pure water, or pure enough to be discharged on the ground without producing bad results.

The final disposal, where made into an underground system of distributing pipes, is an entirely satisfactory method where the soil is dry and of a sandy nature.

In discharging into sub-soil systems it is well to know that the bacteria existing in the soil and that act upon the sewage are most numerous near the surface, and decrease rapidly as the depth increases, and at a depth of 5 ft. bacterial action practically ceases.

When the soil is wet, heavy or of a clay nature, the final disposal of an underground leeching system cannot be employed effectively, as the liquids have no opportunity to become purified by filtration through the soil, but are simply deposited to saturate the soil, the result of which grows constantly worse.

When these conditions prevail, the discharge chamber may have its contents siphoned into a filter of broken stone and gravel below its lowest level.

From this filter the partially purified water is conveyed to another "sand" filter, also located underground, below the level of the first filter, and from this the liquid is pumped on to the surface of the ground.

It is necessary to pump the filtered water from the second filter at stated intervals, or the water would back up in the filter, thus defeating the purpose for which it is used.

The filtering material will need renewing occasionally, as it will become filled with impurities.

By proportioning the size of the tanks, or a capacity for 36 hours, for instance, septic action will take place without odors.

The daily amount of sewage may be obtained by multiplying the average number of people housed in the building by 30, thus obtaining the number of gallons discharged daily into the plumbing system.

The size of the tank is determined by deciding on the duration of time the liquids are to be allowed to remain in the tanks.

It should be large enough so that the sewage in passing through it has a slow current.

This gives time for the bacteria to multiply at a very high rate, and decomposition is thus effected.

The product is defined as a harmless, colorless and odorless liquid.

This system presents the means of securing a system of sewage disposal under difficult conditions and while it requires more or less attention, will not ordinarily be employed when other methods can be used,

The following illustrations will explain more fully the details of installation.

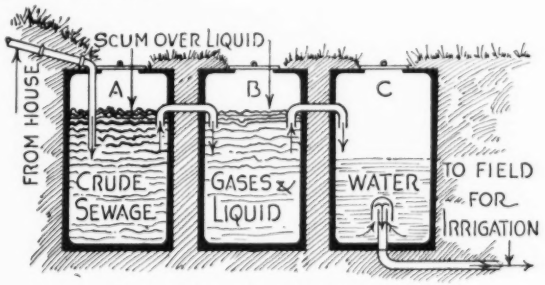


Fig. 1. Waste Disposal Septic Tank.

A, the *grit* chamber, where crude sewage is discharged, and retained to allow the aerobes to act and prepare for entrance into *B*, the settling chamber, where no agitation, or enough air, exists to prevent the anaerobes changing the partially dissolved solids into a liquid state and liberating the gases.

C, the discharge chamber. When this chamber has stored a sufficient quantity it automatically operates the siphon that is connected to the drain leading to a field where the leeching and exposure to air finally leaves all matter without danger.

The scum shown above the water in *A* and *B* assists materially in keeping air and light from the chambers which are shown. These chambers are shown as made of ordinary drain tile, with hub ends uppermost, and covers of iron or stone, closely fitting, but provided in case an examination or cleansing becomes necessary.

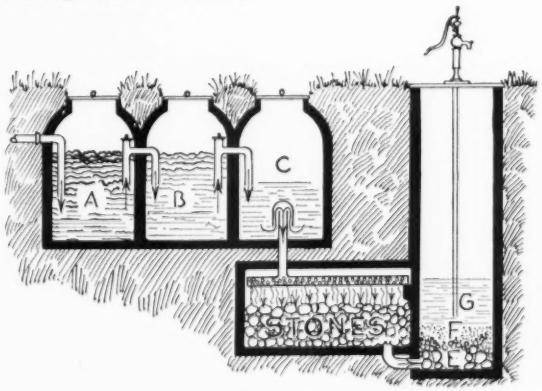


Fig. 2. Septic Tank for Clay Soil.

A, grit chamber filled from house drain with outlet below the scum layer.

B, settling chamber filled from *A*, through pipe overflow, shown by arrows.

C, the discharge chamber which automatically empties whenever the liquid rises high enough to start the siphon provided, and the flush flows into filter bed *D*, filled with stone and coarse gravel.

E, filter bed of sand; the leeching water rises through *F*, the filling being about 2 ft. in depth.

G represents the filtered water that should be pumped out often enough to prevent any set back into *D* or clog either filter bed. This method may be adopted when a clay, stone, or heavy soil will not allow natural filtration, as shown in the previous illustration.

NEW PLUMBING LAW FOR WHITE PLAINS, N. Y.

The Board of Village Trustees of White Plains, N. Y., at a meeting held last week adopted a new plumbing code which provides regulations for the contractors and the plumbing work in this village. It provides that all building plans filed with the building inspectors shall be accompanied by drawings showing the plumbing work to be installed. It provides for an examining board of plumbers and plumbing made up of five members, two members of at least ten years' experience in his line, one journeyman plumber and the health officer and village engineer. The Examining Board shall meet whenever the president of the village requests them in writing to do so. They shall examine all employing plumbers and those seeking certificates as such which certificates cost non-resident plumbers $25 and $1 a year thereafter, while the resident master plumber must pay $5 and $1 a year thereafter. All master plumbers doing work in White Plains must be registered. All funds must be turned into the public health account monthly. The board will give hearings on all violations of the ordinance and may revoke or suspend the license of any master plumber found guilty. The master plumbers on the board will serve for two years except the first year, when one master plumber will be appointed for one year and one for two years. The journeyman plumber's term will be one year. The members of the board get no compensation but all necessary administrative expenses shall be paid by the village. The Board of Trustees shall appoint not less than three master plumbers, none of whom are members of the examining board, as inspectors of plumbing, whose fees shall be $5 for a complete inspection and 50 cents a fixture when the work includes ten or more fixtures. The use or placing of any plumbing work before it has been passed by the inspector is a misdemeanor. The term of the inspectors is one year. All master plumbers doing work in the village must be registered and licensed, and must file a bond of $2,000. His license may be revoked if he allows it to be used in connection with work not actually under his management. The plumbing law also specifies the materials to be used and the character of workmanship. No person but a plumber licensed and registered may install new work or repair old work in the village.

The penalty for a violation of the ordinance is the loss of the license, a fine of $100, and the offender may be held to be a disorderly person.

There was never a time when more interest has been taken in the New Year's Number of "Domestic Engineering" than this year. We want you to write for it something that you think will benefit the trade or that seems to you to be worthy of publication. Send it along at once.

Questions and Answers

HOW TO BEND BRASS PIPE.

Editor "Domestic Engineering":—Will you kindly explain how brass pipe can be bent?

San Francisco, Cal. H. P. E.

When brass is hot it becomes very brittle, and for this reason special care must be taken to guard against breaking the pipe. A method which has been found very successful is the following:

First fill the pipe with sand, well tamped, and plug the two ends. Lay the pipe on the end of the bench, with the end to be bent overhanging the edge. Place a plumber's furnace under the point where the bend is to be made, and cover the pipe at that point, with a piece of sheet iron, or a shovel, or anything else that will confine the heat. As the pipe heats, the weight of the overhanging part will cause it to bend. Care should be taken that the pipe does not become overheated.

In this way a bend of any angle can be made, even sharp, right angle bends. When the bending is complete, allow the pipe to cool before removing it.

If the overhanging end is too short to have sufficient weight to bend, a weight may be attached to the end of the pipe.

THREE RANGES HEATING ONE BOILER.

Editor "Domestic Engineering": I have a problem that I would like your assistance on. The sketch which I enclose will show what it is.

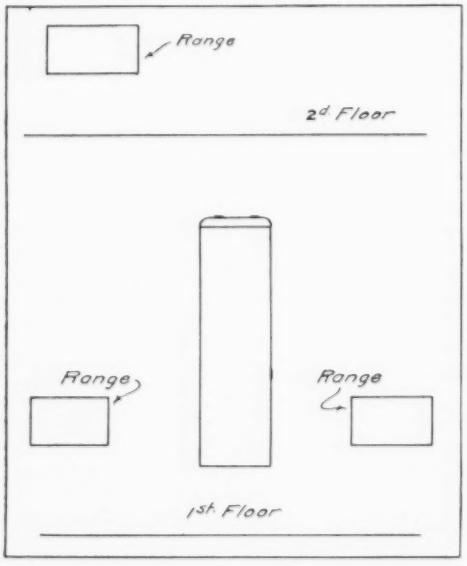


Fig. 1.

The boiler, which is on the first floor is to be heated by two ranges on the same floor and also by a range on the second floor, connections being such that either range may work separately, or all together. Hot water is to be furnished to fixtures on the first, second and third floors.

Dallas, Tex. J. H. L.

The problem presented by "J. H. L.," we show in Fig. 1, and in Fig. 2 we show connections which we believe will answer the requirements.

The problem would be a very simple one if it were not for the second floor range. The only way in which even fair results can be obtained from a boiler heated by a

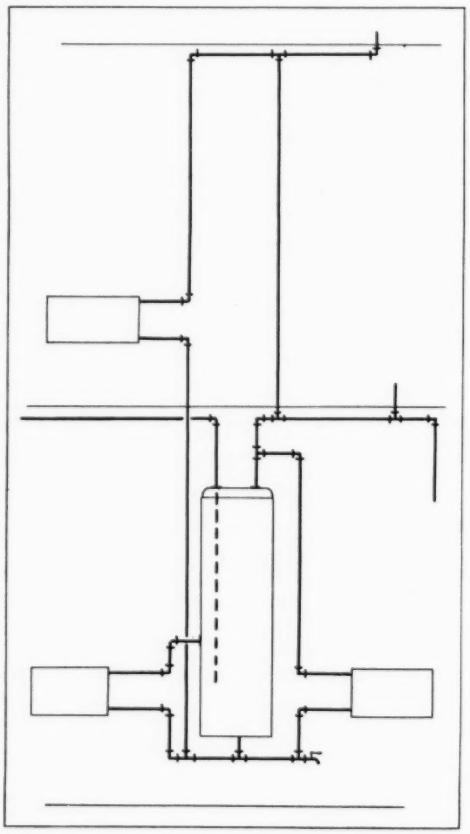


Fig. 2.

range above it, is to run the flow pipe from the range, at least as high as the ceiling, and then carry it down into the flow pipe from the boiler. These connections we show in Fig. 2.

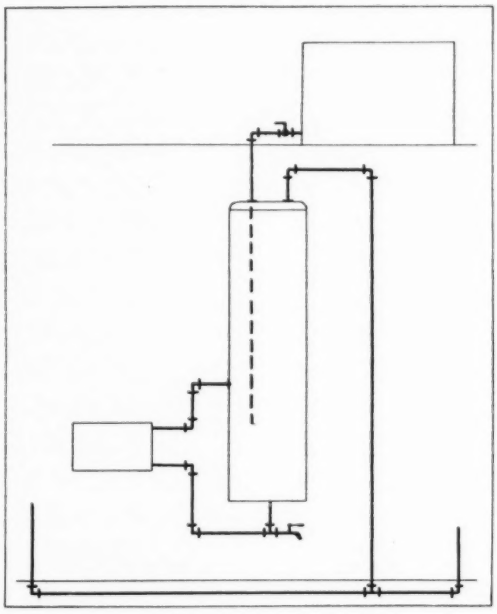
One of the great difficulties in getting good results from this connection is the collecting of air at the high point, but as there are fixtures to be supplied on the third floor, a connection from the high point to one of these fixtures will allow all air to escape through the bibb at the fixture.

We would caution "J. H. L." against expecting too much from the upper range, as the supply to a boiler from a range so located is made in an unnatural way and the result at best will be none too good.

Regarding the two lower boilers, one of them may be given a quick-heating connection, the choice for this connection naturally falling on the stove that is most in use during the summer season, we should say, when the least amount of heating is being done.

AIR-LOCK CAUSES TROUBLE.

Editor "Domestic Engineering": I recently put in a boiler supplied from a tank on the floor above, but it has never worked properly. I cannot see why the connections are not correct, and am writing you to see if



Where Air-Lock Causes Trouble.

you can locate the trouble. I am enclosing a sketch of the work.

Colorado Springs, Colo. Plumber.

It is apparent at a glance, that the head under which this boiler is working is very low, and without doubt the cause of the trouble mentioned by "Plumber," is that air accumulates in the flow pipe from the boiler, and the pressure is not sufficient to force it out.

This difficulty is very easily remedied however, by the use of an expansion pipe of small size, connecting into the flow pipe at its highest point, carried up to and over the supply tank, with an open end.

Such a pipe as this will vent the air and cause the job to work satisfactorily.

A LARGE COOLING COIL IS NEEDED.

Editor "Domestic Engineering":—What is the best and most economical way to cool water to supply a four-cup, self-closing bubble fountain? We would like to use the ice box now on the job, which is 36 inches long, 20 inches wide and 20 inches high, with a capacity of 200 lbs. of ice and containing about 40 feet of ⅜-inch block tin coil. This, however, is not sufficient to obtain the desired result. Is block tin pipe best for a job of this kind, or what is the best, and how large a coil should we use?

Clearwater, Fla. G. H.

G. H. cannot do better than to use a block tin coil for this work, and we think the general plan that he is using for cooling the water is a good one. Block tin pipe is the safest material that can be used for this purpose, and as the water will often have to stand for a considerable time in the coil, it is necessary that a coil be used which will not affect the water injuriously.

We do not know in what sort of a place the bubbling fountain is being used, or how heavy and constant the demand is.

However, we would say that the entire storage in the 40 ft. coil of ⅜-in. pipe is not over 1 quart, which, under almost any conditions would seem to be far too small.

If ½-in. pipe were used, it would not take up much more room than the ⅜-in. coil, and its capacity would be nearly double. Without knowing what the requirements are, we would suggest the use of 80 ft. of ½-in. pipe in the coil. Probably with the information we have given him, and knowing how far short the present coil is in giving a sufficient supply of cold water, G. H. will be able to determine whether the amount and size of coil that we have suggested will be larger than needed, or not large enough.

THE ECONOMY OF USING PIPE COVERING.

Editor "Domestic Engineering:"—Can you give me any idea of the saving in fuel that may be expected from the use of pipe covering?

Also, how does the use of pipe covering affect the size of boiler to be used?

Hudson, N. Y. J. B.

Of course there is a great variation in the saving of fuel between the cheapest grade and the most efficient grade of pipe covering. Any covering of any merit whatever, will make a saving of 10 per cent at least, and some of the very best grades will run this amount up to very nearly 30 per cent.

Very often a smaller boiler can be used when the piping is covered, and it is a fact that in many instances the difference in cost between the smaller boiler and the boiler required if the pipes are not to be covered, will go quite a long way toward paying the cost of covering.

HOW TO ESTIMATE SIZE OF FURNACE COILS.

Editor "Domestic Engineering."—Can you tell us how to figure out the necessary amount of coil for heating range boilers of different size?

Philadelphia, Pa. B. and S.

It is customary to estimate that 1 sq. ft. of heating surface in the coil will be required for each 15 gallons of water in the boiler to be heated. This calculation is made under the supposition that the coil is covered by the fire.

When the coil is located in the combustion chamber the heating effect of the fire will not be so great, of course, and a larger surface will be required than that which we have named above.

After the number of square feet of heating surface is known, the number of feet of pipe necessary to be used in the coil can be determined by using the following table:

45 ins. of ¾ in. pipe = 1 sq. ft. surface
36 ins. of 1 in. pipe = 1 sq. ft. surface
28 ins. of 1¼ in pipe = 1 sq. ft. surface
24 ins. of 1½ in. pipe = 1 sq. ft. surface
20 ins. of 2 in. pipe = 1 sq. ft. surface

A SOMEWHAT UNUSUAL OVERHEAD STEAM HEATING SYSTEM.

Editor "Domestic Engineering:"—I enclose herewith a rough sketch of an overhead dry-return steam heating system which I am planning to install. Before doing so, I would, however, like to ask you if I have got the right idea.

Denison, Iowa. Constant Reader.

Correspondent has the right idea of the installation of an overhead steam system to supply the radiators as located on the sketch submitted.

We are of the opinion, however, that an improvement could be made in the method shown by him. The idea

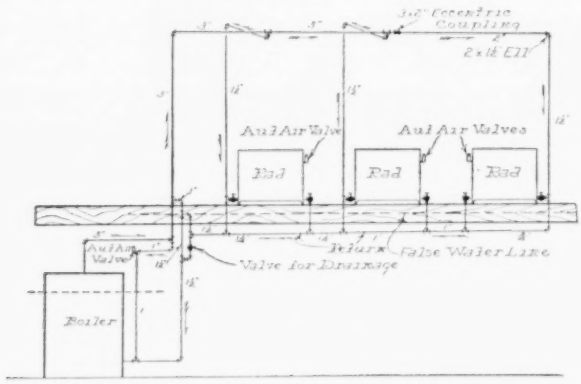


Fig. 1.

of trapping risers and returns to prevent short-circuiting is good, but why not trap the return line as a whole and arrange the trap so that it can be drained if it should be desired in order to prevent freezing when apparatus is not in use. We show by Fig. 1 a method of doing this, and not knowing the conditions of building construction

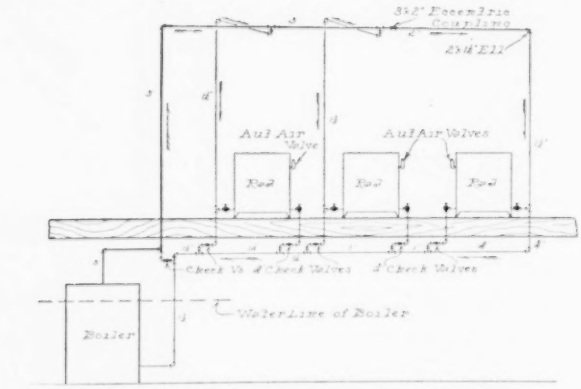


Fig. 2.

we show the principle rather than the actual job. The radiators, if necessary, may be raised on brackets or pedestals in order to permit of more perfect drainage in case this return is run above the floor.

If conditions are such that the return can run on the ceiling of the basement or the ceiling of the floor below the rooms in which the radiators are placed check valves may be used on the return and the return piping may be installed as indicated on our sketch, Fig. 2. We might say in connection with sketch, Fig. 1, that all of the radiators may be connected one-pipe or with a single valve if it is desired, and the drip from the 1½-inch drop riser to the return in this instance should be 1¼-inch in size, the return starting from the bottom of the riser or drop supply farthest from the boiler.

The manner in which the tee on top of the riser out of the boiler is shown by correspondent indicates that another main is to be extended in the direction opposite to that shown on the sketch. If this inference is correct we desire to caution against the use of a tee "bull-head" as shown. When a single riser out of a boiler is to sup-

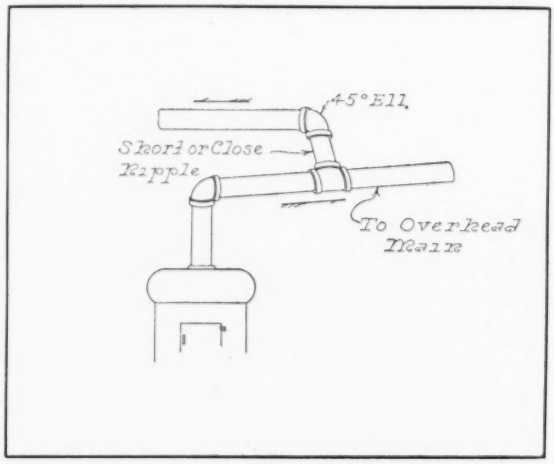


Fig. 3.

ply two mains extending in opposite directions the connection should be made as illustrated by our sketch, Fig. 3.

The trap shown at the bottom of the return at the boiler on correspondent's sketch is neither necessary nor desirable. The return should drop only to a point where it can be connected directly into the return opening of the boiler as indicated on sketches, Figs. 1 and 2. Attention is called to the drip from the end of the horizontal 3-inch main. As this main should pitch downward from the boiler it is necessary that it be bled or dripped to relieve it and also the 3-inch riser of accumulated condensation.

We think that from the suggestions made and the sketches offered our correspondent will have little difficulty in installing a system in conformity with existing conditions that will work properly and give efficient service.

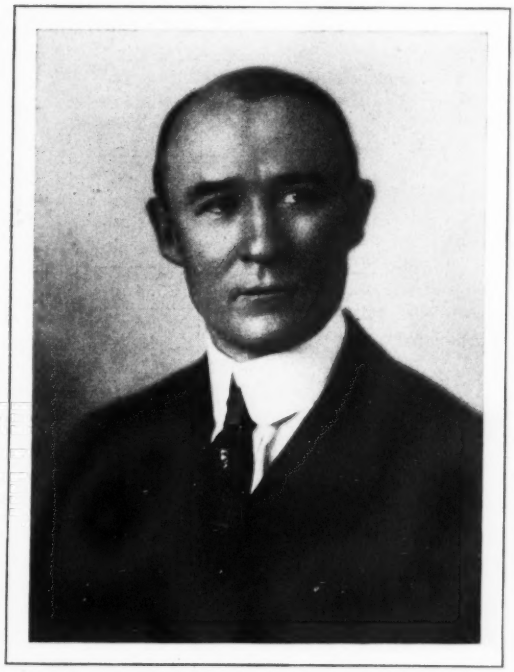
F. E. Dooley, John H. Hall, L. H. Tarpley and W. O. Van Schuyver of Portland, Ore., have applied for a franchise for a central hot water and steam heating system on the King's Heights section of Portland. The plan is to supply the residents of that district with hot water and heat.

L. H. Mitchell, plumbing and electric light inspector of Elsinore, Cal., has resigned his office and the resignation was accepted. Elsinore has recently had a septic tank constructed which is not a complete success, and its supposedly automatic arrangements require a man to spend considerable time keeping them in order. The City Council wanted the inspector to do this work by virtue of the official position he held. His salary was only $25 a month and Mr. Mitchell thought that the city wanted too much for the money, hence his resignation.

Little Sidelights on Men in the Trade

His Pet Hobby Was Patent Litigation, But Now It's Motoring, By Jingoes

THE tranquil shades of evening were falling gently around a certain woodland nook up in southern Michigan where flow the calm and peaceful waters of beautiful Lake Juno. Only the placid murmurings of the lake or the occasional "butting-in" of a saucy horse-fly, or a starved mosquito, broke the spell and supreme serenity of this delightful spot. These winged pests of mother earth would ever and anon pause to take supper upon the vulnerable head of a jolly and excellent Chicago gentlemen as he sat holding a brand new casting rod.



Byron E. Van Auken.

The biting was good, very good. At least the flies and mosquitoes thought so. At any rate it was observable that the jolly fisherman would frequently murmur something under his breath, scratch his noble dome and then proceed to fish again.

His whole interest was focused and centralized on one proposition, namely, fish, and he was landing a few, too—big bullheads principally. He smiled triumphantly every time he jerked one of the finny tribe from out its native haunts.

The crack sportsman who was having such a gay and biting time of it was a gentleman well known to the trade—none other than Byron E. Van Auken, president of the Consolidated Engineering Company of Chicago, a concern doing an international business in the selling and manufacture of specialties used in the Van Auken system of vacuum heating and heat modulation. Mr. Van Auken is one of the efficient and progressive western men of business who have helped to put the "go" into Chicago.

For years he has loved to spend his vacation amidst the lakes and woods of southern Michigan, where he certainly goes in strong for fishing as a pastime. He lives almost exclusively on a fish diet while on these trips. Fish, we are told, is a fine brain food. Maybe that's true. Anyhow Byron E. motors back to old Chi with renewed mental vigor and sharpened wits, ready to give his competitors in business a good swift run for their money.

Mr. Van Auken is what you might call a self-made man. He has had a rather hard row to hoe, but he just kept on ahoeing until he had hoed out a successful business career for himself. He was born at Fairchild, Wisconsin, in 1870, and he obtained all the schooling he ever had in the common schools of Mondovi, near the town of his birth.

At the age of twelve he went to work at Battle Creek as a helper for a gas and steam fitter. He continued at this until he was sixteen years old, after which he went to Toledo, Ohio, where he secured a job as a journeyman steamfitter. That was in 1886. He remained there one year, and then vamoosed to Indianapolis where he put in another year as a journeyman.

Things were beginning to come his way very nicely. He showed that he had executive and managerial powers in that cranium of his, and that he was cut out for bigger work. As a natural result of his efficiency and original ideas he was chosen at the age of 18 as superintendent of L. J. Highland & Company, steamfitting contractors of Indianapolis. He had charge of a considerable number of important jobs. He managed the steamfitting installation at Fort Thomas, Ky., at the time of its erection. Also the same work at the state school for the feeble minded at Fort Wayne, Ind., and the State Reform School at Plainfield, Ind., and likewise the Sailors and Soldiers Orphans' Home of Toledo. All these jobs were handled during the years 1888-89.

He came to Chicago in the fall of 1890 and established the Van Auken Steam Specialty Company, which was run under a co-partnership until the next year—1891, when it was incorporated. The same year Mr. Van Auken sold out his stock in the concern, and severed his connection with the company. He then went to Boston, Mass., where he served as a contracting engineer for A. B. Franklin, the steam heating contractor. After two years with Mr. Franklin he accepted a position in which he was given the exclusive U. S. selling agency for the Van Auken Brothers Company. He held this responsibility until the year 1900 when he organized the now well known Consolidated Engineering Company of Chicago, a firm which today operates branch offices in all the important cities of the United States. Two foreign agencies are maintained, one at Vancouver, B. C., and another at Tokio, Japan. When the company was organized in the year mentioned, Mr. Van Auken served as vice-president and treasurer. He continued in that capacity until a year ago, when he was elected president of the concern.

Speaking of hobbies and pastimes, Mr. Van Auken declares that his chief hobby used to be patent litigation. He confesses that he took to this "delightful" hobby like a duck to water. But he admits that it got quite monotonous at last, and now he had abandoned it for auto-

mobiling. He spent $100,000 in riding the litigation hobby, so you see he finally figured that it was a deucedly expensive pastime.

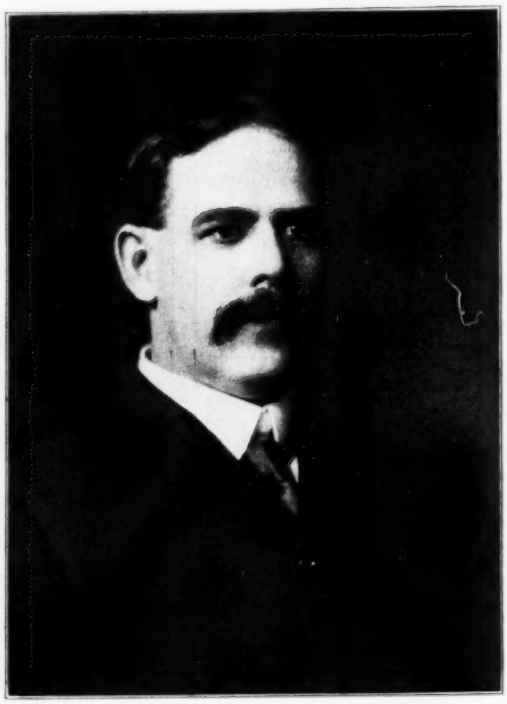
Everybody who buys an auto has to be initiated before he can boast that he is a real, full-fledged member of the motor fraternity. Well sir, Van Auken was initiated about five years ago, and it was a fierce initiation too. Talk about "riding the goat" in some of those complex club initiations you hear about. Well, Van Auken sure did "ride the goat," or rather the "auto goat," when one dark night his tire blew up on the Indiana line, near Oak Glen, overturning the machine and burying six passengers, including the wives of two gentlemen of the party and the daughter of another. Byron E., who was driving, was the only one who "got his medicine." All the rest came out of the accident with hardly a scratch. Mr. Van Auken had his left ear cut off when that valuable part of his anatomy came into swift contact with a barbed wire fence. He also had his shoulder dislocated and was otherwise badly bruised. He painfully proceeded to tunnel a passage for the rescue of his companions, using his hands as a shovel. When the passage was large enough, two of the men of the party crawled out, and putting their shoulders to the machine, they lifted it into position again, releasing the rest of the passengers.

Van Auken was hurried to the office of a local surgeon who spent three hours in sewing him up into shape again. It was a rough experience, alright, alright, and one that Van will not soon forget.

The Luther Burbank of the Plumbing and Heating Trades.

A man is known by the company he keeps. There's no disputing that truism. But we happened to know, however, of a man who is known by the potatoes he keeps—not ordinary potatoes, mark you, but extraordinary ones, and very much so. The man we refer to is a southern gentleman who flourishes as a master plumber in Atlanta, Georgia. He is David W. Yarbrough, secretary of the Georgia State Association of Master Plumbers, well known as a convention goer, and one who has held various important offices in the association, local, state and national.

David was pulling up "spuds" on his farm the other day, when suddenly he unearthed a strikingly freakish sweet potato. He stared hard at it, and scratched his head, once, twice and three times. "Well, this gets my goat!" he gasped. If the "tater" hadn't been covered with loam and hadn't been in a potato patch, Mr. Yarbrough would have sworn that that potato was naught else but a pipe fitting he had been using in the business. It was curved in the shape of a soil pipe S trap, and from all appearances might have served for A-1 piping. "That potato must have known I was a plumber!" declared David Yarbrough.



David Yarbrough, of Atlanta, Ga., the Luther Burbank of the Plumbing and Heating Trades.

In our editorial opinion, we believe that David should be re-christened, and should now go forth and rejoice in the name—"The Luther Burbank of the plumbing and heating trades."

Study the photo reproduced herewith, and you will note that even a potato, although meant to be gobbled, will at times insist upon asserting itself to a wonderful degree.

The Sweet Potato That Caused David Yarbrough to Sit Up and Take Notice and Its Counterpart, a Soil Pipe S-Trap.

Our hobby just now is the New Year's Number of "Domestic Engineering." We want you to write us a letter for publication, giving us some suggestions for the good of the trade, some anecdotes, a picture or two or a funny story. Send them in at once.

Why Some House-Organs Died

Causes Range from "Too Busy" to "It Didn't Pay"—Some Ceased Publication Because Trade-Paper Advertising Was More Profitable

By C. R. LIPPMANN, In "Printers Ink"

IT HAS often been said that the advertising morgue offers as profitable a field for study as advertising successes. In viewing the subject of house-organs from all angles, it is interesting, therefore, to listen to the experience of firms who have discontinued them.

The heavy editorial task involved in a really first-class house-organ seems to be the chief cause of the demise of publications of this class. For, says Mr. Longnecker, editor of The Hartford Agent, the house-organ of the Hartford Fire Insurance Company: "Writing on the same subject month after month, year after year, is more of a task than nine men out of ten will admit until they have tried it. The minute the editor runs dry and cannot evolve a new angle, a new phase, a new sidelight, he is lost."

This sort of work takes time, more time than the crowded advertising man as a rule has at his disposal. That is why the Studebaker corporation discontinued its house-organ, believing "that such a publication should be the work of one man particularly fitted for that purpose, and should not break in on the advertising manager's general routine."

"Discontinued for lack of time," is the way the Chester "Times" echoes this statement, which is "seconded" by the words of the N. O. Nelson Mfg. Company: "We discontinued the house-organ because we found it too much trouble to edit it." The same statement in another version is made by Babcock, Hinds & Underwood, Binghamton, N. Y.: "Young man who had this work in charge left."

Not wishing to do things by halves, the Warner Company, makers of speedometers, discontinued their house-organ because "people who get up house-organs, use the shears too much, and we did not want to do the stereotyped thing and couldn't put the necessary time into it to make a really original paper."

Another cause of house-organ mortality is cost. Some time ago there appeared the "Belknap Magazine," Vol. 1, No. 1, issued by the Belknap Hardware Company, a large hardware jobbing firm in Louisville, Ky. It was equal in size, shape, contents, illustrations and appearance to a standard magazine. "It was magnificent, but it was not war." No further numbers appeared. The cost was too terrific.

The Bausch & Lomb Optical Company had a similar experience: "The magazine was popular and appreciated," they say. The cost of literary service, engravings and printing, however, was greater than the traceable returns seemed to warrant."

The Wilmot Castle Company, Rochester, N. Y., makers of sterilizing apparatus, found that "the small edition made the cost out of all proportion to the probable benefit. There are not over three hundred surgical instrument dealers in the country." In other words, the circulation was too small for a profitable cost of production.

The circulation was too large in the case of the Security Trust Company, of Rochester, with an edition of 30,000, all in local territory. This house-organ was discontinued to cut the expense.

Sometimes the item of cost brings about a suspension, with the intention to resume publication. But this often suffers the fate of other good intentions. It did so in the case of the Ainsworth Shoe Company, also of the Library Bureau, which discontinued their house-organs during the last panic.

A house-organ was discontinued through "a mistaken idea of economy" on the part of the American Ever Ready Company.

The Chicago Flexible Shaft Company says its house-organ was "discontinued because it was found too expensive for the returns we were getting from it. We struggled along with it for just a year."

Sometimes the house-organ is too successful to live. This was the case with "Merchandising," the house-organ started about two years ago by "The Dakota Farmer" to influence dealers in favor of goods advertised in its columns. "It developed into such a mighty important proposition," say the publishers, "that we couldn't handle it with our organization and the resources at the time. When we started the little magazine the year previous, we had some well-defined plans as to what we wanted it to do, and it was only a month or two before we found that we had struck red hot iron, and a job bigger than we were equipped to handle."

This statement is of keen interest to general advertisers, showing how receptive dealers are to any systematic attempt to link them up with consumer advertising.

"The Point of Contact," published by the Lammers-Schilling Company, was stopped because "rush of other matters made it impossible to take care of it properly." Brand & Borden, printers, dropped their "Hobby" because they were so busy that "we could not give the time to turn it out."

A mechanical feature is responsible for the stoppage of "The Electric Weld Herald," issued by the Pittsburgh Steel Company. Says J. M. Hewitt, of the advertising department: "'The Electric Weld Herald' was issued at a time when the colored supplement for the Sunday newspapers was a novelty, and the results that were realized from this advertising at that time were very gratifying. When the novelty of the colored supplement began to wear away, we discontinued."

Where the appropriation is limited the house-organ must sometimes yield to other channels of publicity. "'The Book of the Royal Blue' was discontinued after months of deliberation, having been in existence fourteen years. The question arose as to whether it was becoming a perfunctory proposition, and being a direct expense (no outside advertising allowed), it was decided to discontinue it and use other forms of advertising matter to ascertain whether it could be dropped, as the house-organ field is one which has grown to large dimensions."

The Washington "Times" discontinued its house-organ because in the words of E. C. Rogers, manager of advertising, "we could get more results for the same amount of money spent in direct solicitation by circulars of various kinds, imitation typewritten letters, folders, mailing cards, etc., and the results have justified the change. We find that we can make this latter medium of publicity more timely, using a good deal of 'Johnny on the spot' stuff

that has to do with something that has happened the very day the circular goes out or something we have learned that very day."

The Gurney Foundry Company, Toronto, discontinued the house-organ, "after running it for three years, because in the opinion of the writer we were able to accomplish as much, if not more by spending less money in a monthly trade journal here, which is the official organ of the Hardware Association of this country."

David Adler & Sons Clothing Company discontinued their house-organ "owing to the fact that we took up national advertising. But," they continue, "we are today receiving numerous requests from our customers for copies."

Doubleday Page & Co., since discontinuing their "Advertisers' Almanac," say "we have spent most of our money on circulars and advertising in the trade journals. However, there are frequent occasions when we have news to send to our customers and we then regret that the house-organ is not still in existence."

An auto truck manufacturer found it wise to suspend his house-organ "pending a revision of the mailing list, originally compiled from prospects sent in by branch offices and agencies. We later decided that too many small prospects were represented; that hundreds of minor officials did not count and as we did not have the name of the proper officials in many of the corporations, the little book which cost us thousands of dollars a year was frequently confiscated by the mailing clerk or office boy. At least this was all we could assume from a postcard canvass which brought in the answer 'No' to the question, 'Do you get our houseorgan regularly?'"

House-organs created to fulfill a certain mission naturally reach their end when their purpose has been fulfilled. Joseph Middleby, Jr., Inc., discontinued the house-organ because "we had started the 'Messenger' with a view to assisting in the education of the baker along certain lines, and concluded that our work along this line was no longer necessary. We considered the trade papers a better field for this sort of advertising."

Blumenthal Bros., Philadelphia, discontinued their house-organ with the discontinuance of their efforts to push the line of flavoring extracts for which their house-organ was gotten out. So did the "Official Information Bureau" when they sold out the department for which they had issued a house-organ.

Brown & Zortman Machinery Company, Pittsburgh, got out a house-organ to get rid of their stock of second-hand machinery and "found that it helped our sales department materially. We discontinued it during the panic of 1907, as it was pretty expensive and only paid us when we had a large list of second-hand machines to offer and when the market for second-hand machinery was good. Since business resumed we have never gotten our second-hand stock up to the point where we considered it would pay to re-issue it."

The Willys-Overland Company, of Toledo, Ohio, makes this interesting statement: "We discontinued our house-organ for the simple reason that it was costing us too much money. Our output for the present year is 40,000 automobiles, which would make it well-nigh impossible for us to reach all automobile prospects through the medium of a house-organ. Our year's experience in the publication of a house-organ for the Willys-Overland Company has proven that this magazine, which was of general interest to people who owned or considered owning automobiles, was in so great a demand that the list of requests to be put on the mailing list proved beyond our control. We are not in a position to draw a line, as it is necessary to be fair to everybody. When the circulation reached 75,000 a month, we deemed is necessary to discontinue its publication altogether."

These various instances of actual experiences show that a house-organ, like any other advertising tool, is not a panacea for every advertising need. In order to be successful it must be well planned and financial provision must be made for it so that a really efficient publication can be gotten out—otherwise the money is to a large extent wasted.

"FALLACIES" ABOUT FRESH AIR.

London Scientist Claims That There is No Poison in Expired Air.

In a discussion of the qualities of expired air held recently in London, England, Professor Leonard Hill is quoted as saying: It has generally been supposed that all the bad effects of close, crowded space are due to chemical impurity of the air, that the air is contaminated by the exhalations of human beings, and that it becomes impoverished of oxygen. But what people always complain of is the heat and want of movement of the air. Proof lies that the excess of carbonic acid in the air in a crowded room, if sufficient to have any effect at all, will only make people breathe a little more deeply, and ventilate their lungs more fully. The oxygen in a crowded room is never diminished by more than one per cent, the cracks, crannies, and pores in the room always suffice to let fresh air in, so that the oxygen does not suffer a greater diminution. This diminution of oxygen has no physiological effect whatever. In the famous Alpine health resorts there is a greater diminution in the concentration of oxygen, owing to the attenuation of the air at higher altitudes. Therefore the chemical state of the air, so far as regards carbonic acid and oxygen, has nothing whatever to do with the discomfort which is felt in crowded and confined places, or with the healthful effect of open-air life. A great deal has been made of the supposed existence of volatile organic poison in expired air. Its existence is asserted in all the popular books of hygiene. There is no evidence, worth anything, in favor of the existence of this organic poison in expired air. The unpleasant smell of crowded, confined atmosphere is not smelt by the crowd within, but only by those who come in from the fresh air. There is no evidence that such smell has a poisonous effect; but it may nervously affect sensitive people, especially those who imagine it betokens the existence of a poison in the air. The smell may be prevented by cleanliness of person, clothes, and habitations.

T. A. Slattery, of Flagstaff, Ariz., has taken a contract for plumbing in two dormitory buildings at the Northern Arizona Normal School, Phoenix, for $6,135. The work is to be completed by June 1, 1914.

The Board of County Commissioners at Las Vegas, Nev., will receive bids up to December 1st for the plumbing and heating of the County Court House at that place. Bids for the general contract for the building will be opened at the same time.

At Russellville, Ark., the Russellville Plumbing Co. and the Russellville Iron Works, both incorporated companies, have consolidated, the latter company taking over the business of the former. The Russellville Iron Works does a general foundry machine and plumbing business. The officers of the reorganized company are: J. W. White, president; J. M. Ball, vice-president; T. F. Hoye, general manager and John W. White, treasurer.

January 27, 28 and 29, 1914.—The twenty-second annual convention of the Illinois Master Plumbers' State Association, at Rock Island, Ill. The officers of the association are: President, W. J. Hilliard, Elmhurst; first vice-president, C. D. Brownell, Champaign; second vice-president, John L. Robertson, Mason City; treasurer, O. W. Dawson, Decatur; secretary, W. C. Haviland, Coulter Block, Aurora, Ill.

February 17, 18 and 19, 1914.—The twenty-third annual convention of the Ohio Master Plumbers' State Association, at Cincinnati, with headquarters at the New Gibson House. The officers of the association are: President, F. W. Sponseller, Canton; vice-president, James A. Wood, Toledo; secretary-treasurer, Eb. Ellen, Cleveland.

March 9, 10 and 11, 1914.—Annual convention of the Indiana State Association of Master Plumbers, at Lafayette, Ind. The officers of the association are: President, Wm. J. Woolley, Evansville; vice-president, Joseph G. Hayes, Indianapolis; secretary-treasurer, A. E. Werkhoff, Lafayette, Ind.

April 21 and 22, 1914.—Annual convention of the Pennsylvania State Association of Master Plumbers, at York, Pa. The officers of the association are: President, D. F. Durkin, Philadelphia; vice-presidents, George W. Palmer, Lemoyne; Robert Purse, Johnstown; E. D. Swoyer, Allentown; treasurer, John H. Birchall, Allentown; secretary Harry L. Righter, 5424 Germantown Avenue, Philadelphia.

BRONX MASTER PLUMBERS' ANNUAL BEEFSTEAK PARTY.

The Annual Beefsteak Party of the Bronx Master Plumbers' Association will be held Saturday evening, December 6th, 1913, in the Washington Hall, 497 East 166th Street, New York City. The master plumbers' wives, daughters and sweethearts are invited to this affair, tickets for which are $2.50 a person. It goes without saying that the affair will be a most successful one.

ORANGE MASTER PLUMBERS' MONTHLY MEETING.

The Master Plumbers' Association of Orange, N. J., held its regular monthly meeting on Tuesday night, November 19th, in the Masonic Hall on Main Street, in that city. Following the meeting the members enjoyed a few games of euchre, in which the gentleman scoring the highest number of points received a beautiful prize donated by the winner of last month's euchre. This game was closely contested, three gentlemen scoring 42 points out of a possible 45 points. Charles Harrison, of the plumbing firm of Harrison & Walker, was successful in cutting the deciding card and won a box of wiping cloths (in common parlance, handkerchiefs). During the game refreshments were served at intervals.

Columbus, O.—George A. Welling has been appointed receiver for the J. L. McCoy & Son Co., heating contractors in this city.

Gering, Nebr.—C. S. Veach has opened a plumbing establishment in this town.

Lebanon, Pa.—Charles Brooks has opened a plumbing establishment at 351 North Ninth Street.

Nashville, Tenn.—The Southern Plumbing & Heating Co., of this city, has been incorporated with a capital of $5,000. The incorporators are: Frank Sanders, F. E. Laughead, G. B. Dearing and E. E. McLaughlin.

St. Louis, Mo.—The William M. Clancy Plumbing, Heating & Construction Co. has been incorporated with a capital of $5,000. The incorporators are: Edward C. McGrath, Richard C. Hanlon and William M. Clancy.

Louisville, Ky.—The National Plumbing Co., of this city, has been incorporated with a capital of $3,000 to conduct a general plumbing business. The incorporators are: Edward J. Winstell, Fred H. Miller and Charles A. Wickliffe.

Paterson, N. J.—The Bert Gessler Co., of 128 Knickerbocker Avenue, has been incorporated with a capital of $10,000 to conduct a plumbing and heating business. The incorporators are: Bert Gessler, Thomas W. Lavach, jr., and Paul W. Frenzel.

Charlotte, N. C.—J. Threatt, J. V. Andrews and H. S. McAuley have formed a partnership under the name of the City Plumbing Co. and are making arrangements to open an up-to-date plumbing establishment at 212 North College Street in this city.

Bushnell, Ill.—T. H. Warwick, of Memphis, Mo., has purchased Roy L. Hunt's plumbing business in this city.

Wooster, O.—Harry Rennecker has moved his plumbing business into the Badger building on East Liberty Street.

Lansing, Mich.—William C. Noyes has purchased the plumbing stock and business of Louis Krause on Turner Street and he is moving the stock to his own plumbing establishment on East Franklin Avenue.

Johnstown, Pa.—The plumbing firm of Schumann & Vrooman, at 224 West Main Street, has been dissolved by mutual consent. Mr. Vrooman retires and Fred R. Schumann will continue the business at the old stand.

Muscatine, Iowa.—William J. Watson, who has conducted a plumbing and heating establishment on Iowa Avenue in this city for several years, has purchased the stock and equipment of the Eppel Plumbing Co. on East Second Street, and will soon move his old business to the Eppel quarters.

Efforts are being made to have the office of plumbing inspector established at Muskegon, Mich.

The city council of Tucson, Ariz., has authorized the expenditure of $10,050 for the purchase of water meters.

Springvale, Me.—James Mullins has been awarded the contract for plumbing the new Springvale National Bank building.

Shamokin, Pa.—Ballantine & Toby, of this city, have secured the contract for the heating and ventilating of the new school building in this city.

Jamestown, N. Y.—M. J. Murray & Co. have been awarded the contract for the plumbing in the new addition to District School No. 7. The contract amounts to $3,393.

Columbus, O.—The Ohio Heating Co., of this city, has secured the contract for the installation of heating systems in several buildings at the Ohio State Fair Grounds.

New York, N. Y.—Henry Rudolph, of 610 Bergen Avenue, has been awarded the contract for the plumbing and heating of the garage building at 151st Street and Bergen Avenue.

Chambersburg, Pa.—The Chambersburg Plumbing & Heating Co. has secured the contract for the installation of a heating plant in the new C. V. R. R. office building. Consideration $7,000.

Portland, Me.—Willey & Calhoun, of this city, have secured the contract for plumbing and heating of the $100,000 apartment building, which is to be constructed at the corner of Danforth and State Streets.

St. Paul, Minn.—George M. McGeary & Co., of this city have secured the contract for the installation of an up-to-date heating and ventilating system in the new high school building in South St. Paul. Consideration $12,187.

Gloversville, N. Y.—M. J. Kavanaugh, of South Main Street, has been awarded the contract for the plumbing in the new Y. M. C. A. building. Sowle & Briggs, of North Main Street, will install the heating system in the same building.

Fort Dodge, Iowa.—The Fort Dodge Heating & Plumbing Co., of this city, has been awarded the contract for the installation of plumbing and heating systems in the new school building being erected at Iowa Falls, Iowa. The consideration is $16,235.

New York, N. Y.—Wm. J. Flynn, of 166th Street and Jerome Avenue, has been awarded the contract for the installation of a modern plumbing system in the new theater and office building being erected on Boston Road, between 167th and 168th Streets, by the Weissager Amusement Co., of this city.

Lima, O.—The Clark & Jones Heating & Ventilating Co. has been incorporated with a capital of $25,000 to take over the business formerly known as Clark & Jones, heating and ventilating engineers. The new concern will make some enlargements and the added capital will be applied to the extension of the business.

Chester, W. Va.—Fred Rodgers, of this city, has been awarded all plumbing and gas work in the new Masonic Temple which is being erected here. His contracts have just been started. Rodgers has also been given the plumbing, wiring and gas fitting in the new office and addition being erected here by the Taylor, Smith & Taylor Pottery Co. This contract will be started next week.

Toledo, O.—The Larsen & Wood Co., of this city, has just secured the following contracts: Heating and plumbing in the country home of Mrs. Bertha Peck; heating of H. W. De Vore's handsome residence in Glenwood; heating, C. L. Graves' residence; heating and plumbing, the reconstructed Huron Block, to be occupied by the Whitney & Currier Piano Co.; heating, Elizabeth Heimmich's new apartment house. These contracts amount to about $13,000.

Thomas A. McMahon.

Thomas A. McMahon, a plumbing contractor, of Brooklyn, N. Y., died Thursday, November 20th, at his home in that city and in the same house in which he was born 36 years ago.

John C. Morrow.

John C. Morrow, for many years a member of the plumbing firm of Clark & Morrow at Yonkers, N. Y., and lately connected with the office of the local public works, died at his home in that city on Thursday, November 13th, in his 61st year. He had been suffering from tuberculosis for the past ten years.

A. A. W. Fish.

A. A. W. Fish, senior partner of the plumbing firm of A. A. W. Fish & Bros., at 14 Twenty-ninth Street, San Francisco, Cal., died last week at his home in that city in his 38th year. His death was caused by appendicitis. He was a very active member of the San Francisco Master Plumbers' Association.

Howard B. Anthony.

Howard B. Anthony, secretary and treasurer of the Michigan Brass & Foundry Co., of Detroit, Mich., died at his residence in that city on November 20th. He is survived by a widow and two daughters. Mr. Anthony was for some years secretary and treasurer of the McRae & Roberts Co., manufacturers of plumbers' supplies.

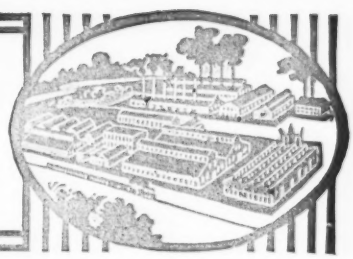
Albert J. Shirk.

Albert J. Shirk, a retired master plumber of Pittsburgh, Pa., died at his home in that city on Tuesday, November 11th, in his 66th year. He was born in Pittsburgh and spent his entire life there, with the exception of the period of the civil war in which he saw service under Captain Tyler. After the war he engaged in the plumbing business, from which he retired about twenty years ago. He is survived by his widow, three sons and two daughters.

Cape Vincent, N. Y.—Maroh & Drake, plumbing contractors, have filed a petition in bankruptcy.

Washington, D. C.—Michael B. Casey, a master plumber of 918 Sixth Street, has filed a petition in voluntary bankruptcy. He schedules his liabilities at $9,100 with no assets.

Among the Wholesalers and Manufacturers



WILL MAKE LARGE IMPROVEMENTS.

The A. Hambach Co., of 414 to 418 First Avenue, Seattle, Wash., will make extensive alterations and improvements to its building at this address. An entirely new plumbing system will also be installed. The Hambach Co. conducts a jobbing business in plumbing and steam supplies.

WILL MAKE LIGHTING FIXTURES.

The Portage Chandelier Co., of Akron, O., has been incorporated with a capital stock of $10,000 to manufacture and deal in lighting fixtures of all kinds. The incorporators are Ora V. Miller, W. C. Johnson, A. W. Morette, A. Bush and H. E. Shelton.

THE H. W. JOHNS-MANVILLE CO. HAD FINE EXHIBIT AT ELECTRICAL EXPOSITION.

The H. W. Johns-Manville Co., of New York City, had a most interesting exhibit at the Electrical Expositon, recently held in that city, consisting of an Audiffren-Singrun refrigerating and ice-making machine in operation, which attracted much attention..

SCHWANDER BRASS MANUFACTURING CO. NOW ITS NAME.

The L. Howard Schwander Brass Manufacturing Co. of 823 North Eighth Street, St. Louis, Mo., has changed its name to the Schwander Brass Manufacturing Co. This company deals in brass goods for plumbing and waterworks.

PEERLESS HEATER CO. OPENS CANADIAN BRANCH.

The Peerless Heater Co., of Chicago, Ill., and New York City, has established a Canadian branch of its business in the Birks Building at Montreal, Quebec. Harry O. Walker, managing director of this company's eastern business, has recently returned from Montreal, where he completed the arrangements for the opening of the branch.

WEIL BROS. TO BUILD LARGE ADDITION.

Weil Bros., jobbers of plumbing and heating supplies and pumps and pump supplies, at 647 to 651 West Lake Street, Chicago, have just awarded the contract for the construction of a large addition to their present building. The new addition will be six stories high of brick and steel construction and it will extend 130 feet on Lake Street and 155 feet on Desplaines Street. Work will be started on the new building within the next few days.

"MOVIES" SHOW HOW PIPE IS MADE.

The Power Club of Pittsburgh, which is the outgrowth of the Society of Steam Supplies Salesmen, held its first meeting Friday afternoon, November 22nd, at the Hotel Duquesne, in Pittsburgh, Pa. The feature of this meeting was a series of moving pictures of the manufacture of pipe by the National Tube Co., of McKeesport, Pa., showing the progress of the pipe from the raw material up to the finished product.

THE ANNUAL MEETING OF THE NATIONAL COMMITTEE OF THE CONFEDERATED SUPPLY ASSOCIATIONS.

The annual meeting of the National Committee of the Confederated Supply Associations was held in New York City, Thursday, November 20th, and it was one of the best attended and most interesting meetings ever held

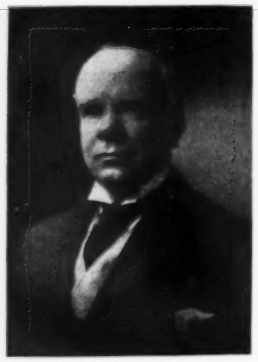
J. J. Ryan, of J. J. Ryan & Co., Chicago, Just Elected President of the National Committee of C. S. A., for the Seventh Time.

by the committee. The following officers and members of the board of directors were elected for the ensuing year: President, J. J. Ryan, of J. J. Ryan & Co., Chicago; vice-president, W. A. Myler, of the Standard San-

itary Mfg. Co., Pittsburgh, Pa.; treasurer, L. O. Koven, of L. O. Koven & Bro., New York City; secretary, F. S. Hanley, 261 Broadway, New York City. Board of Directors: J. J. Ryan, W. A. Myler, L. O. Koven; F. D. Keeler, Rockford, Ill.; F. W. Hubbard, Boston, Mass.; S. E. Hunting, Watertown, N. Y. The following committees were also appointed: Standards Committee: J. F. Wolff, chairman, Chicago; George H. Bailey, Pittsburgh, Pa.; H. B. Hallett, Conshohocken, Pa.; F. W. Hubbard, Boston; F. D. Keeler, Rockford, Ill. Public Comfort Stations Committee: H. M. Hoelscher, chairman, Chicago; C. C. Hale, New Haven, Conn.; E. Hamman, New York City; J. Walter Lyons, Trenton, N. J.; W. A. Myler, Pittsburgh, Pa., and Walter Walls, Philadelphia. The following resolution was unanimously adopted by the meeting: "Resolved, that a committee of three be appointed to select and present to President Ryan a suitable token of the high regard and esteem in which he is held by his fellow-members and as a slight appreciation of the very great services rendered this Committee during the past six years."

THE PARAGON BRASS MFG. CO. NOW ITS NAME.

The Sanitary Co., of Cleveland, O., manufacturers of plumbers' brass goods and plumbers' fixtures, has increased its capital stock to $100,000 fully paid, and has changed its name from The Sanitary Company to The Paragon Brass Mfg. Co. The company's trade-mark, "Paragon," brought out in the changed name of the concern is expected to be a decided improvement. The officers of the company will practically be the same as heretofore. H. H. Hackman, its president, is well known in Cleveland, being connected with some of the large industries there and an influential citizen. H. J. Geurink, secretary and general manager, will continue to devote all of his time to the manufacturing and selling end of the business. R. C. Koblitz, the treasurer of the company, is a man of wide experience and ability, and he will undoubtedly add greatly to the strength of the company. Within the past year, this concern has increased its output, added more men to its selling force, and the extra capital will now enable it to take care of this increased business.



H. H. Hackman, President.

R. C. Koblitz, Treasurer.

H. J. Geurink, Secretary and Gen. Mgr.

Officers of the Paragon Brass Mfg. Co., of Cleveland, O.

SECURE LARGE ORDERS FOR STEAM PIPE.

The National Valve & Manufacturing Co., of Pittsburgh, Pa., has booked a number of good orders for steam piping for large jobs. Among the number are the Aspinwall Pumping Station, for the City of Pittsburgh; Illinois Iron and Bolt Co., at Carpentersville, Ill.; United States Government power plant for lock gates at Sault Ste. Marie; Trion Manufacturing Co., Trion, Ga.

P. F. HOWARD CO. COMPLETES LARGE WAREHOUSE.

The P. F. Howard Co., of Oakland, Cal., has just completed the construction of a warehouse in connection with its store in that city, the intention being to carry a large stock of iron pipes and fittings, soil pipe and fittings and plumbing specialties. As a sort of housewarming, the company recently gave a dance and entertainment to about two hundred plumbers. This event was greatly enjoyed, and it was a most pleasant affair in every respect.

NEW HOME IN BALTIMORE FOR H. W. JOHNS-MANVILLE CO.

In order to take care of the big increase in its volume of business, the Baltimore, (Md.) branch of the H. W. Johns-Manville Co. has been compelled to seek larger quarters. The new home of the company is a modern six-story building with floors measuring 47x187 feet, located at 207-13 E. Saratoga Street, which is within two blocks of the post office and right in the heart of the business section. It will include an attractive store and up-to-date offices, in addition to large warehouse accommodations. To facilitate the handling of incoming and outgoing shipments there will be a railroad switch running into the building.

OF INTEREST TO ADVERTISING AND SALES MANAGERS.

As chairman of the program committee of the Advertising Clubs Convention at Toronto, John K. Allen, formerly editor of "Domestic Engineering" and now advertising manager of the "Christian Science Monitor," Boston, is arranging the program, which begins June 21, 1914. This opening day will be the occasion for many lay sermons from such men as Norman Hapgood, editor of "Harpers Monthly;" Jos. H. Appel, John Wanamaker's director of publicity; Robert Adamson, Mayor Gaynor's secretary, and George W. Coleman, ex-president of the Associated Advertising Clubs. These Sunday speakers will be fewer in number than at the Baltimore convention this year, and next year's plans for both divisional and general meetings, insure a more compact, concentrated

program. A prominent feature of one of the latest general meetings will be the reading of that article which, in the judgment of the award committee, has won the "Advertising & Selling Magazine" $1,000 prize. This is to be awarded each year to the man who sends in before May 15th the most constructive and helpful essay on the subject of advertising or sales. The prize is to be given through the Associated Clubs, by "Advertising & Selling Magazine" of New York, and should be a spur to careful thinking and writing by many who have been through the problems that come to advertising and sales managers. Any of our readers who are interested in this unusual chance to tell a helpful story of some work in distribution, and by doing this to win a splendid prize for the most significant essay, can get full details from Mr. Allen, or from "Advertising & Selling Magazine," 95 Madison Ave., New York, N. Y.

A. G. Machesney, for fifteen years traveling engineer and locomotive inspector with the Baldwin Locomotive Works, has become associated with the Railway division of the Detroit Lubricator Co., of Detroit, Mich.

Wm. Devine, western representative of Thomas Maddock's Sons Co., of Trenton, N. J., has recently moved his "lares et penates" from St. Louis to Chicago, where he will make his headquarters and his future home.

Theodore Ahrens, president of the Standard Sanitary Manufacturing Co., of Pittsburgh, Pa., and Louisville, Ky., is one of the recently appointed members of the Louisville Executive Committee for the Anglo-American Exposition, to be held in London next year.

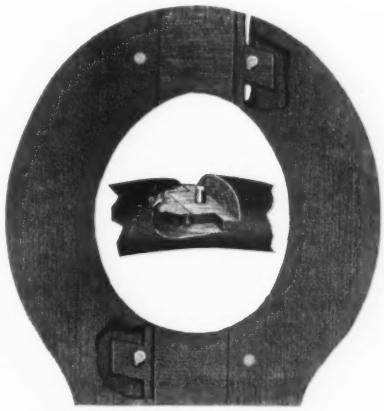
Frank H. Kuhn, traveling representative of the John Wood Mfg. Co., of Conshohocken, Pa., has been spending the last ten days in Chicago and vicinity in his company's interest. He is now on his way to the plumbing trade in Southern Illinois and Indiana.

Harold D. Thompkins, a graduate of Cornell University and formerly associated with the Niles-Bement-Pond Co., of Philadelphia, has accepted the position of mechanical engineer with the Smooth-On Mfg. Co., of Jersey City, N. J. He will be in charge of its concrete waterproofing department.

On last Saturday evening at 6 o'clock at the home of the bride in Kewanee, Ill., was celebrated the marriage of Leo M. O'Neill and Miss Elizabeth Green. Mr. O'Neill is purchasing agent for the Leader Iron Works at Decatur, Ill., with which firm he has been connected for the past five years. He formerly made his home at Kewanee where he was at one time connected with the National Tube Company. Among those present at the wedding were T. E. O'Brien, vice-president and general manager of the Leader Iron Works and brother-in-law of the groom and A. G. O'Neill, the groom's brother, also with the same firm. The event was of special interest because of the popularity of both young people. The newly wedded couple escaped by automobile to Toulon, from whence they journeyed to Peoria and Chicago and left for an eastern honeymoon trip of two weeks' duration. They will be at home to friends at the Nazawan Apartments, 125 N. Edward Street, Decatur, Ill., after February 1st.

THE "HAMMERLOCK" WATER CLOSET SEAT.

The accompanying illustration will give the reader a pretty clear idea of the construction of the Hammerlock closet seat, manufactured by the J. C. Eichman Manufacturing Co., of Baltimore, Md. This seat is held together by stout wood dowels driven by pressure. No artificial support enters into the construction of this seat and



The "Hammerlock" Water Closet Seat.

there is therefore no unequal expansion or contraction of the wood itself and no joints opening up to harbor dirt and filth. The seat is furnished with a bar hinge. Parties interested in this closet seat can obtain information from their jobbers or from the manufacturer upon application, mentioning "Domestic Engineering."

PROCEEDINGS OF THE THIRTY-FIRST ANNUAL CONVENTION OF THE N. A. M. P. PUBLISHED IN BOOKFORM.

The proceedings of the Thirty-first Annual Convention of the National Association of Master Plumbers, held at Philadelphia, Pa., June 17-19, 1913, has just been issued by the association, making a substantial volume of 348 pages, 5½x8½ inches, larger than any previous year. It contains a complete report of the convention including the debate in executive session on the "Contingent Fund" proposition and the discussion on the "Weldon resolution" for the appointment of a commission to investigate the advisability of members selling material they do not install. A new feature in this book is the publication of half-tone engravings of national state vice-presidents, who made reports at the convention, and of authors of essays, prepared for the meeting. Another innovation, for which President Chris. Irving deserves recommendation, is the publication in this book of the names of the officers of the state and local associations, thus making a permanent record of their tenure of office. Should any one of our readers, who is entitled to a copy of this book, not have received his copy, he can no doubt secure it upon request to President Chris. Irving, Railroad Building, Denver, Colo.

THE INTERNATIONAL HEATER CO.'S HANDY REFERENCE BOOK FOR 1914.

The International Heater Co., of Utica, N. Y., has just issued its 1914 Handy Reference Book for the heating trade. This book is divided into four distinct sections that are easily distinguished by the different tints of the pa-

per. Section 1 tells all about the International line of boilers. Section 2 lists and prices all repair parts of the company's boiler line, including up-to-date and obsolete patterns. This is a complete "International Dictionary" and dry reading, of course, except to a man who wants to replace a broken or worn-out part, when it is most interesting. Section 3 is much more complete than in former editions, and we miss our guess if steam-fitters and heating engineers will not appreciate the complete data on radiators, valves, regulators, etc. Section 4 is a boiled-down compendium of heating data, the practical accepted tables of recognized authorities, with enough "reason-why" explanations to make it clear. Every steam-fitter who is interested in high grade apparatus and in the best ways of planning heating installations will find this book of great value. It is bound in flexible cloth with round corners and consists of 160 pages size 3¾x6½ inches, thus fitting the pocket easily. Any reader of "Domestic Engineering" can secure a copy from the company upon request.

"A HANDY-BOOK OF CURIOUS INFORMATION."

"A Handy-Book of Curious Information," comprising Strange Happenings in the Life of Man and Animals, Odd Statistics, Extraordinary and Out-of-the-way Facts concerning the Wonderlands of the Earth. By William S. Walsh. This book is exactly what its title implies. Its 942 pages contain an enormous amount of desirable odds and ends of knowledge, alphabetically arranged and spiced with more entertainment than one would expect in a reference book. From the meaning of "A 1" to the "Sunken City of Ys" you can dip into Mr. Walsh's book almost anywhere and find something worth knowing. What is Acetylene Gas and who invented it? Who made the first experiment in Cold Storage, and with what result? Who invented the first Envelope? When and where was the first Swimming Bath constructed? These and hundreds of similar questions are answered satisfactorily in this book. The article on "Curiosities of Water" contains much information that can not be found elsewhere. Among other things this article states: "It is impossible to throw a few drops of water on a red-hot stove. The water can never touch the stove at all. What is seen is a few drops rolling rapidly over the surface gradually getting smaller until they disappear. If the drops are on a perfecty level place, one can see under them to the other side of the room, thus proving that they are not in contact with the stove itself. What actually happens is that the bottom of the drop changes at once to steam or vapor on coming close to the hot surface, and this vapor is supplied by the drop as it gradually goes away. So the drop rests on a cushion of vapor until it is entirely dissipated. This state of water is known as the spheroidal state, and is of interest simply on account of its peculiarity and seemingly paradoxical behavior. The reason why the drop is not immediately evaporated or changed to steam is also very interesting. The water vapor that intervenes between its under surface and the red-hot stove is a very bad conductor of heat, and consequently the full intensity of the heat cannot get to the water itself, only the amount transmitted through the vapor being available for this purpose." No volume of information about out-of-the-way facts can pretend to be absolutely complete, but this one covers a wide range and is well written. It deserves a place in the library of every man who likes to read about real curiosities.

It is published by J. B. Lippincott Co., of Philadelphia, costs $3.50, postpaid, and can be obtained from the Book Department of "Domestic Engineering."

BOOKS SUITABLE FOR CHRISTMAS GIFTS.

The Christmas spirit is in the air, and the suggestions made last week as to the use of books as gifts have met with hearty approval. Here are some more suggestions—books that are timely and useful—books that will interest the master plumber and fitter, the foreman, the journeyman, the apprentice. They are for sale by "Domestic Engineering."

Sanitation in the Modern Home, by Jno. K. Allen, is an invaluable suggestive guide to the architect, plumber, heating engineer and house owner in designing and building a residence, providing a healthful, comfortable and convenient home. Its eighteen chapters are devoted entirely to this subject covering the selection of a building site, preparation of the soil, the installation of plumbing, heating, ventilating and lighting. It is a neat cloth-bound book of 271 pages, 5¼x8 inches, and sells for $2, postpaid.

Dean's System of Greenhouse Heating by Steam or Hot Water, by Mark Dean, is convenient and reliable and makes greenhouse heating estimating very simple. It contains tables giving radiation necessary per square foot of glass, tables giving glass surface, sizes of flow and return pipes, and other useful information. It is a flexible cloth-bound book of 46 pages, 5½x7¾ inches, and its price is $2, postpaid.

Roughing-In House Drains, by Jno. K. Allen, is a complete guide to the work of roughing-in from the digging of the sewer to the finishing length of the house drain, giving each step to be taken and telling how and why it is done. It contains an alphabetical index as well as drawings of the different pipes, and it is bound in board 6¼x4¼ inches, having 184 pages and selling for 50 cents, postpaid.

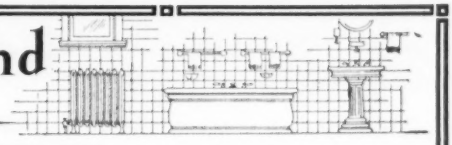
Dean's Steam Fitter's Computation Book, by Mark Dean, consists of tables giving the cubical contents of rooms of various sizes, tables giving the number of square feet of wall surface, tables giving the number of square feet of window surface, tables of radiation required for rooms of any size at various proportions and in addition to these there is some general information on points of interest to steam and hot-water fitters. It is a flexible cloth bound book, 5x7½ inches, containing 90 pages. The price is $2.50, postpaid.

Sizes of Flow and Return Steam Mains, by Jno. K. Allen, is composed of an apprentice's query as to the correct sizes of pipes in steam heating plants and answers thereto by the leading heating engineers in different cities of the United States giving current practice. It is full of practical advice and useful tables. It is bound in boards 4¼x6¼ inches, and sells for 50 cents, postpaid.

The Sanitary Sewerage of Buildings, by Thomas S. Ainge, is an authoritative statement of the principles and practice of sewering buildings. It includes the design and construction and disposal of sewage in unsewered localities. It is a well-illustrated book, containing 209 pages, measuring 5½x7¾ inches, bound in cloth. Price $1.50, postpaid.

A Practical Manual of Steam and Hot-Water Heating, by Edward R. Pierce, is an authoritative treatment of the subject for the everyday workman in the heating industry. It brings forward fundamental principles by which conflicting tables are reduced to an easily understood and common working basis. It overthrows false ratings and creates a new era in heating values. It contains 339 pages and numerous heating tables and is bound in cloth, 5½x8¾ inches. The price of this book is $2.50, postpaid.

Among the Plumbing and Heating Contractors



Illinois

Chicago and Vicinity.

The E. Baggot Co., of 19 East Lake Street, has secured the contract for plumbing a public high school to be built at Park Street and Fairmont Avenue, Morgan Park.

The contract for the plumbing in an 18-flat apartment building to be constructed at 4634-46 St. Lawrence Avenue has recently been awarded to Reynolds Bros., of 1835 West 22nd Street.

John P. Dunne, 2856 Lincoln Avenue, has recently obtained the contract for plumbing a large apartment building to be erected at 2449 Eastwood Avenue.

The plumbing system for a two-flat building, to be built at Polwyn Place and Manor Avenue, will be installed by Otto Liss, of 3528 North Robey Street.

Erickson Bros., of 5961 South Halsted Street, will install the plumbing in a one-flat building, to be erected at South Aberdeen and 76th Streets.

The contract for plumbing an apartment building to be constructed at 1448-56 East 67th Street, has recently been awarded to William Downs, of 4031 South State Street, who will also install the plumbing in a 6-flat building at 905-7 Lawrence Avenue.

Noble & Thumm, 2313 Lincoln Avenue, have been awarded the contract for plumbing a residence to be built at 4124 North Robey Street.

The plumbing installation for flats and office to be erected on West Main Street in St. Charles, Ill., will be handled by Van Dervolgan & Tyler of that city.

The North Shore Plumbing Co., of Chicago, will install the plumbing in two stores and flats to be built at 5047 North Clark Street.

Engval Stevenson, of 5812 South Ashland Avenue, has recently been awarded the plumbing contract on a residence to be erected at 5623-5 South Maplewood Avenue.

T. J. O'Malley, 308 West Oak Street, will install the plumbing in an apartment building to be constructed at 1457-9 Catalpa Avenue.

A. Dettman & Co., of 2131 Bissell Street, will install the heating system in a factory to be built on Larchmont Avenue. Owners, Bell & Howell, 217 Illinois Street.

The heating system for a 27-flat apartment building to be erected at 59th Street and Michigan Avenue, will be installed by P. J. Callahan, of 9830 South Vanderpool Avenue.

The heating system in two stores and 14 flats, to be erected at 901-3 North Robey Avenue, will be installed by Maher & Adelman, of 514 LaSalle Street.

H. L. Gorman, of 9218 Cottage Grove Avenue, has been awarded the contract for the plumbing in the flat and office building, now being constructed at 125 West 111th Street, for Dr. F. A. Bonthuis, 110 Michigan Avenue.

Biddeford, Me.—Fred Hotte, who conducts a plumbing establishment on Alfred Street, has filed a petition in bankruptcy. His liabilities are scheduled at $1,863.41 and his assets at $700.35.

Massachusetts

Salem.—A. M. Hawkes Co., of this city, has been incorporated with a capital of $1,000, to conduct a general plumbing business. The incorporators are: S. E. Hawkes, Alvin M. Hawkes and J. E. Butman.

Boston.—Bennett Rockman and James H. Butler, doing a plumbing business under the firm name of B. Rockman & Co., with shops at 105 Humboldt Avenue and 85 Harrison Avenue, have filed a petition in bankruptcy. Their liabilities are scheduled at $3,240 with no assets. Individually, Mr. Rockman has liabilities aggregating more than $57,000 and assets of $325. Mr. Butler has no individual assets or liabilities. Of Mr. Rockman's liabilities $52,500 is secured and the balance unsecured and he has about 30 creditors.

Wisconsin

Beloit.—Zimmerman & Osborn, of this city, have secured the contract for the plumbing, heating and roofing of the new Besly plant on Third Street in this city. Consideration, $18,000.

Oconto.—Carl Riggins, of this city, has secured the contract for the installation of plumbing and heating systems in Isaac Stephenson's residence on Main Street, Menominee, Mich.

Michigan

Detroit.

So enthusiastic are they of the future prospects of the city, that the George H. Soffel Co., with headquarters in Pittsburg, Pa., have decided to establish a permanent branch in Detroit. A. J. Slonaker is in charge of the Detroit office, and is considered an expert on plumbing, heating and ventilating systems. In addition to the Palace Theatre contract which they were awarded lately, as previously mentioned in our columns, they have also landed the plumbing contract for the Hecker building on West Fort Street, now in course of construction, as well as the new Krescge building, at the corner of Adams and Park Streets, which will be 18 stories high, ground for which already has been broken. The present office of the company is established at 623 Dime Savings Bank building, but negotiations are now pending to move to Jefferson Avenue, near Beaubien Street, where the office and shop will be consolidated.

Plans are now complete for the new Detroit Athletic Club building to be erected on Madison Avenue. Albert Kahn, in the Trussed Concrete building, is the architect. The building is to be completed by December 1, 1914. Contracts have not yet been awarded; in fact, bids have not yet been received. It has taken eight months to

complete the plans. According to leading club managers, and experts "who know," the club will have the finest building devoted to athletic club purposes in the United States, and will occupy an entire square block. The building will be eight stories high and cover an area 150 by 124 feet. The club and dining features are taken care of on the first and second floors; the bath and gymnasium features on the next several floors, and sleeping rooms on the remaining floors. The Turkish bath department, which is designed to be one of the finest in America, is located on the third floor. The plunge will be on the fourth floor. On the two top floors there will be 120 sleeping rooms. Speaking of the plans, Architect Kahn remarked: "In regard to heating and ventilating, all air introduced into the building will be washed and the temperature automatically controlled. The air in the kitchens will be changed approximately every one and one-half minutes, and in game and card rooms every three minutes. In the remainder of the rooms from three to ten minutes. Plumbing fixtures are to be of the very best quality." The cost of the building will approximate $1,000,000.

Architects Rogers & Bonnah are preparing plans for the alterations to the building on Campus and Monroe Avenue, now occupied by the American Express Company. The plan of the new lessees is to cut the space up into small stores. Figures will be received after December 10th and will close December 15th.

Architect C. H. Crane is preparing the plans for a concrete and steel theatre building to be erected in Buffalo, N. Y. He will take figures after January 1st; building will start March 1st.

Ohio

Columbus.

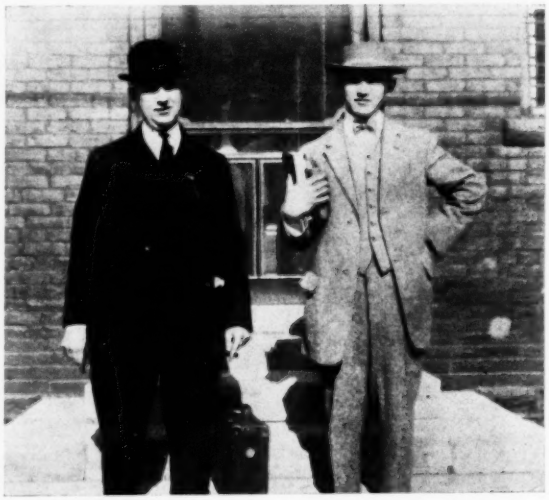
The indications are very bright in Columbus for active building operations during the coming three or four months. In fact, the prospects are better than at any time during the past year. Architects and builders are busy on plans and specifications and material men are getting ready for a number of contracts to be awarded. In all, it is believed that about four million and a half dollars will be spent in construction work in 1914. Among the larger buildings to be erected are: An eight-story retail store-room for the L. L. White Co., on North High Street; an interurban station on West Rich Street, to cost about $500,000; a $150,000 Elks' Home on East Broad Street; a club house for the Columbus Athletic Club, to cost $500,000, to be located on East Broad Street; an eight-story bank and office building on East Broad Street, and a $125,000 wholesale grocery building to be built by the G. W. Bobb Co. on Naghten Street, and churches to the value of $150,000. In addition to these, plans are being prepared for a million and a quarter dollar hotel building, to be erected at the corner of Broad and High Street by the Deshler family.

A beginning has been made on a series of ground-floor changes at the Chittenden Hotel, Columbus, which within six months or a year, will transform that section of the hotel. The alterations are incident to the coming change from American plan to the European plan, effective January 1, 1914.

Columbus.—Not even the state of Ohio is exempt from inspection, as State Librarian Newman has found out, and, as a result, the plumbing in the rooms used by the traveling library force now is undergoing repairs. Some time ago, complaint reached the state board of health that the plumbing was in disrepair. The state board of health sent the state plumbing inspector after the state librarian. The state inspector made the state librarian see things in a new light and the repairs were ordered.

Plumbing, heating and electric contractors of Columbus are figuring on the work in the new Ford Motor Co. building to be erected in Cleveland Avenue. Plans for the heating, plumbing and wiring have been filed with the Builders' Exchange. The bids will be received by John Graham, supervising architect of the company.

The accompanying picture shows good likenesses of two traveling salesmen who have a large number of friends among master plumbers in Ohio. The gentleman at the



R. C. Koontz, of Pittsburgh, and E. W. Bettinger, of Cincinnati.

left being R. C. Koontz, of the Rowland S. Wilson Co., of Pittsburgh, and the one at the right, E. W. Bettinger, of the Crane-Hawley Co., of Cincinnati. The picture was taken recently at Marietta, O.

Youngstown.

Arrangements are being made to finance the erection of four additional stories to the new hotel, "Ohio," at Youngstown, O., which is owned by the Youngstown Hotel Co. No bids for any work will be taken until after January 1.

City Engineer Lillie, of Youngstown, states that plans and specifications are almost ready for 8 additional filters at the filter plant and for remodeling the 12 old filters. When the filters are all installed the capacity will be increased from 10,000,000 to 25,000,000 gallons a day.

After being in use little more than two winters, the heating system of the county building in Youngstown is beginning to show signs of wear, and if present indications are to be believed, the coming winter will see the system in such a condition that an entirely new outfit of pipes will have to be installed soon. The manner in which the system was installed, which is said to have been in violation of the contract, is believed to be responsible for this condition.

Youngstown.—The village of Girard is not satisfied with the present water service in that village and the council and engineer will inspect the water works plant on the Church Hill road. The water pressure is too low for safety in case of fire.

Other Cities in the State.

Bids will be received December 17 for a sewage disposal plant to be erected by the city of Canton.

Baths for every room in the house large enough to accommodate the improvements is the order of the board of directors of the Neil House in Columbus. A new hot water heating plant has been installed and work on the new baths will be begun within ten days.

The Schmitzer Plumbing Co., of Cleveland, has been incorporated with a capital of $10,000, to do a general plumbing and steam fitting business. The incorporators are Al Schmitzer, Julius Rothschild, E. J. Thebabon, M. A. Norris and Emil Metzel.

The City Emergency Commission of Hamilton, O., has awarded the contract to George Lingler for the erection of a sewer pumping station at his bid of $1,190. The contract for a booster station went to George Georgeson, at his bid of $1,198, and the contract for the repair of the waterworks receiving well was awarded to Cullen & Vaughn at their bid of $2,250.

The first steps looking to the construction of a garbage and sewage disposal plant at Sandusky, O., have been taken by the council by authorizing the construction of a sewer leading to the plant at a cost of about $3,000. The extension of water mains in Pierce Street from Hayes Avenue to Campbell at a cost of $7,500 has been authorized, as has a like expenditure for extending water mains in the south end.

Fremont.—Health officer E. L. Vermilya estimates that the cost of a filtration plant for this city would be about $35,000. The council is considering the installation of such a system.

Bucyrus.—This city is about to sell bonds in the sum of $180,000 for the municipal water plant and second issue of $150,000 for a sewage disposal system, the plans for which are being revised and are to be up for approval by the state board of health before the first of the year.

Canton.—A project to change the entire plan for the sewage disposal plant has been started by residents of North Industry who oppose the location of the plant on the Moser site as contemplated. It is proposed to secure another site in North Industry.

New York

Syracuse.—Walter Coling, of 606 South Clinton Street, has recently completed the plumbing installation in a warehouse for C. W. Snow, and in a residence for F. A. Garrett.

Syracuse.—Wm. George & Co. have finished the installation of a steam heating system in the $100,000 parochial residence for Bishop Grimes, on East Onondaga Street. They also have nearing completion heating plants in the following structures: Residence on East Genessee Street for Dr. Jacobs, six-family apartment at 105 Slocum Avenue for E. P. Danforth, parish house for Rev. James O'Shea, St. John the Baptist church on Park Street, six-family flat at 204 Seymour Street for D. Cameron.

Utica.—Henry F. Baillet, secretary of the New Jersey State Association of Master Plumbers, addressed the regular meeting of the Utica Association on Friday evening, November 14. His subject was "Costs and Overhead Expense," a topic of vital interest to the master plumber. He illustrated his lecture on a blackboard and forcefully "brought home" his points by the use of very accurate figures. The Utica Association is prospering and is doing all in its power to educate its members to proper business methods. Its president is Geo. S. Brucker, and partly through his efforts thirty-eight members have been enrolled.

Two members of the Bronx Branch Master Plumbers' Association of New York City are receiving congratulations upon their election to important offices in the municipal government of that city at last week's election, namely: William J. Flynn, who was elected coroner, and Peter Schweickert, who was elected to the office of alderman in the 35th district.

Master Plumber William J. Flynn, New York City's New Coroner.

Pennsylvania

Pittsburgh and Vicinity.

A fair amount of new plumbing and heating business is reported on the boards of the various contracting builders in this district, for this season of the year. No big contracts have been announced, although that of the new Masonic Temple in the Schenley Park district is attracting attention from all parts of the country. It has not been awarded, and there is a liberal inquiry for specifications.

Howard Hager Co., of 6101 Penn Avenue, Pittsburgh, which has the general contract for the erection of an eighteen-room public school building at Hudson, O., will soon place the contracts for the plumbing, heating and lighting. The steam heating and lighting, however, are under the reservation of Architects Page & Crobusier, Lennex Building, Cleveland, O.

Philadelphia and Vicinity.

Bulman Bros., of 2825 North 5th Street, have been awarded the contract to install heating and plumbing in the property at 2918 North 8th Street. Consideration $2,200.

Jas. Spear & Co. have been awarded the contract to install a heating system in the residence of Mr. Belber, at 1523 North 16th Street. Consideration $575.

E. E. Weinreich, 5012 Baltimore Avenue, has been awarded the contract to install plumbing and heating in the new properties at 5223 Broomall Street for P. Krebs, Consideration $1,400.

Stewart & Jellett have been awarded the contract to install boilers in the building at 1612 Walnut Street. Consideration $4,000.

A. M. Johnson, of 631 Venango Street, has been awarded the heating and plumbing contract in property at 5232 North Second Street, for C. Schultz. Consideration $635.

Thos. H. Beamer & Co. have been awarded the installation of new plumbing and heating in the new building at 5105 Market Street for Smith Hardican & Co.

Hankin & Harad have been awarded the contract to install heating systems in eight new houses at Media Street and 59th Street.

H. Goldner, of 512 Lehigh Avenue, has been awarded contract to install plumbing and heating in a new building being erected in Richmond for Kern Bros. Consideration $1,350.

H. Manning, of 825 Spring Garden Street is installing an up-to-date plumbing system in a new residence that is being erected in Bycote, Pa.

Washington

Seattle.

At a recent meeting of the Board of Public Works the contract for the installation of a heating system in the administration building of the Tuberculosis Hospital was awarded to the Eckart Plumbing & Heating Co., 1614 Third Avenue, on its bid of $7,070. The contract for plumbing was awarded at the same meeting to the Sound Plumbing Co., of Seattle, on a bid of $4,467 as was the contract for plumbing the power house for the hospital. The latter contract amounts to $1,497.

The Board of Public Works opened bids for furnishing boilers for the power house at the Tuberculosis Hospital as follows: Eckart Plumbing & Heating Co., 1614 Third Avenue, $18,242; Ernst Hardware & Plumbing Co., 514 Pike Street, $19,350; Western Engineering Co., 503 Railroad Avenue South, $20,756; Puget Sound Machinery Depot, First Avenue between Jackson and King Streets, $21,000. In all likelihood the contract will be awarded to the low bidder, the Eckart Plumbing & Heating Co.

The Western Engineering Co., 503 Railroad Avenue South, on a bid of $5,448 was low bidder for the installation of a plumbing and heating system in the Tuberculosis Hospital. The contract has not yet been awarded.

T. J. Garrison, Hinckley Block, on a bid of $1,701 has been awarded the contract for plumbing, heating and ventilating a school building in District 51.

The Sound Plumbing Co. has been awarded the contract for installing plumbing in a library under construction at Renton, Wash. The contract for a heating system has been let to T. J. Garrison, Hinckley block. H. H. Ginnold, Epler block, prepared the plans for the structure.

Dr. H. Kunze, of 4511 Fourteenth Avenue N. E., has awarded the contract for building a $20,000 store building at 4309 Fourteenth Avenue N. E. to N. P. Olson. Bids for both plumbing and heating will be received in the immediate future.

The Alaska Theater Co., 4160 Arcade Building, has prepared plans for a $70,000 moving picture theater to be built at 1114 Second Avenue. The concern will shortly receive bids for the general contract. All plumbing and heating bids will be received by the general contractor.

Practically every plumbing and heating contractor in the city reports fair business which shows a slight increase over the preceding few months. Several large contracts have been let recently and more will be awarded in the near future.

An Attractive Plumbing and Heating Establishment in Seattle.

The accompanying illustration shows one of the best appointed plumbing and heating shops in the city of Seattle. It is owned and operated by the Simpson-Pepper Company, and is located at 314 James Street. A. E. Pepper, one of the members of the firm, is shown standing with his hand on the door knob, "Domestic Engineering's" Washington correspondent is in the center, and a personal friend of the firm is standing on the left. Both Messrs. Simpson and Pepper claim Ontario, Canada, as their birthplace. They migrated to the Pacific Coast about 1896 and began operations at their trade. Two years later they settled in Seattle and have been identified with its growth since. Both men have an enviable reputation as square, industrious business men and have the interest of Seattle at heart. A few of the jobs which this enterprising firm have installed are: The Beacon Hill school, the 14-story Savoy hotel, the Hotel Perry, Hotel Stander

The Simpson-Pepper Co.'s Attractive Plumbing and Heating Establishment at Seattle, Wash.

and the Butler hotel. The firm specializes on hotel and fine residence work. At the present time they are working on a store and warehouse under construction for the Schwabacher Land Co., Fifth Avenue and Pine Street. The plumbing will be installed at a cost of $2,000. They are also installing plumbing in residences owned by F. M. Jordan, Twenty-second Avenue North and Aloha Street, and for S. S. Loeb, of the Seattle Brewing & Malting Co., at Fourteenth Avenue and Aloha Street. Solid porcelain baths and lavatories are specified on both jobs, each of which amounts to $5,000.

The largest contract so far this month has been let to the Eckart Plumbing & Heating Co., 1614 Third Avenue. The contract calls for the installation of 300 fixtures in the Young Women's Christian Association building under construction at 1112-1116 Fifth Avenue. The fixtures include water closets, lavatories, bath tubs, and a complete heating system. This company also recently secured the contract for plumbing at 942 Eleventh Avenue, North, for H. P. Anderson, and at 1424 Tenth Avenue, for McDonald Bros.

S. J. Normile, 314 James Street, will build an apartment house for C. D. Stimson, according to plans and specifications prepared by Architect Schack, Lippy Building, who will soon receive bids for plumbing and heating.

A few of the contracts which were awarded during the first three weeks in November follow:

The Port of Seattle Commission, C. E. Remsberg, chairman, let the contract for installing plumbing in the city wharf at 2135 Railroad Avenue to Wm. B. Mullin, 3615 Phinney Avenue. Mr. Mullin also recently received the awards for plumbing at 3419 Hunter Boulevard for the city of Seattle and for plumbing at 315 Terry Avenue for the Northern Pacific Railway Co.

The Georgetown Plumbing Co., 5715 Duwamish Avenue, recently received the awards and have begun work on plumbing contracts, residences for the following parties: L. Banchero, 6280 Stanley Avenue; Mrs. M. Menaglio, 6252 and 6250 Stanley Avenue; J. A. Richardson, 6270 Fourteenth Avenue South; George McFarland, 6225-6253 Ellis Avenue; Mrs. M. Hagerman, 689 Homer Street; J. Ederer, 985 Harney Street.

G. A. Schott, of 307 North Eighty-third Street, has lined up plumbing work in residences for the following parties: Chas. Holstron, 909 North 84th Street; W. E. Meyers, 126 West 81st Street; W. E. Meyers, 106 West 82nd Street; N. Larson, 383 North 74th Street; S. E. Svendson, 147 North 82nd Street.

Oregon

Bonds in the sum of $175,000 have been voted to be used in the construction of buildings at the State University, Eugene, Ore. Of this amount $100,000 will be used for a modern fireproof administration building and class room; $30,000 for additions and repairs to the present library; $15,000 for repairs to engineering building; $10,000 for repairs to men's dormitory and $10,000 for additions to Deady Hall. The remaining $10,000 will be used for a heating plant.

California

San Francisco and Vincinity.

There is still some complaint among the plumbers, but several important jobs on which figures have been taken are getting about ready for the closing of contracts, and an encouraging number of new inquiries are coming out. Supply houses and manufacturers' agents have taken several orders for important buildings, both here and at other points along the Coast, and from all indications a period of fair activity is now in sight. Conditions, however, are peculiar in several ways. For one thing, the number of important single contracts this year has been comparatively large, and plumbers who have had a few jobs of this nature have been pretty well occupied, while others have have had less work than they expected. Moreover, as nearly as can be estimated there is much more building under way now than before the fire of 1906, and there are not as many journeymen plumbers in the city as there were then; yet the proposition of unemployed is larger.

Supply houses have by this time had an opportunity to study the new tariff schedule in some detail, and from indications there seems to be very little likelihood that any large amount of material in the plumbing line will be imported. Supply men have been advised by some of the foreign pipe works that it will be impossible for them to ship steel pipe to this market. Some dealers have in the past had foreign soil pipe made to their specifications, and may do so again, but under present conditions in the domestic market there is little inducement for such action.

Francis J. Torrance, first vice-president of the Standard Sanitary Manufacturing Co., of Pittsburgh, Pa., spent the last week in San Francisco on a visit to Willard C. Chamberlin, his company's coast representative. He is making a general tour of the Coast territory, and is now in the north, but will return here and visit Los Angeles before going east. He will make his return trip by way of New Orleans, visiting his company's branches in that district.

Several large buildings have been figured lately, and will probably be contracted before the end of the year, while a few new prospects of some importance are coming up. Figures are in for a large office building for the Hobart Estate on Market Street, which will involve a large expenditure for plumbing and heating equipment, and on which awards are expected at any time. Figures have already been taken on the Exposition auditorium, but it will be necessary either to raise more money or to alter the plans, and some delay has resulted. Several hotels, one of them a rather large job, are about ready for figures, and plans are under way for an addition to the Crocker Building. Plans are also well under way for the University of California Hospital in this city, to be a $600,000 building of about 7 stories. Arrangements have not yet been finally settled for the completion of the Oakland auditorium and several school buildings, but the matter will soon be adjusted.

A number of new contracts have been announced in connection with the Exposition, the most important being for the auditorium on the Civic Center site, which is being built at a cost of over $1,000,000. The contract covering plumbing, heating, ventilating, and electric wiring has been placed with Frederick W. Snook, at $20,277. A contract for plumbing, gas fitting, etc., for the Fine Arts building has been awarded to the John G. Sutton Co., at $4,170; and Wittman, Lyman & Co. have taken a contract for plumbing, hot water heating, etc., for the Horticulture building at $3,992. New figures will soon be taken for the entrance tower for the Exposition grounds.

The Burnham Plumbing Co. has taken a contract for a hot water circulating system in a building on Ashbury Street, at $1,526. This company is just putting the finishing touches on a fine job in the sterilizing and operating room of the Mount Zion Hospital. The general plumbing work in this hospital, put in by the John G. Sutton Co., is also about complete.

Figures have been submitted for a heating system in the Marin county farm building. All the figures, which ran a little below $5,000, were rejected, and new bids will be taken.

The master plumbers of San Francisco are preparing for their annual meeting, to be held December 5th.

John Cahill, president of the Master Plumbers 'Association of California, has been making a trip through the interior of the state, and will be in San Francisco next Saturday to discuss various important matters with the other state officers

State Secretary John L. E. Firmin is still working on the summary of the workmen's compensation law, which he finds a bigger job than he anticipated, as there are many points the interpretation of which is somewhat uncertain As the time for the law's enforcement approaches, more attention is given to the question of liability insurance, and it is found very difficult to determine whether

Born in Baltimore Raised Everywhere!

That is what we can say about our unreservedly guaranteed closet seat. There must be a reason for its tremendous sale. If you will look at its construction you will see why the

HAMMERLOCK

Closet Seat

is built to last. Do you see the tongues at each end? They interlock the wood. They're held there by stout dowels. These are driven in by pressure. Now, how can you get them out? *They simply won't come out!* And these dowels are not made of steel—they're wood, as they should be. No artificial support goes into the construction of the *Hammerlock* seat, which means that there will be no unequal expansion or contraction of the wood itself—no joints opening up to harbor dirt and filth.

Try them all and then say *"Hammerlock"* to your jobber. He'll know what you're talking about.

It has a bar hinge and costs no more than the ordinary guaranteed seat, and it is absolutely guaranteed for five years.

J. C. Eichman Manufacturing Company
Baltimore, Md.

Specify the *"Hammerlock"* on your next closet outfit. Don't be afraid, because it has been successfully in use for five years.

it is better to take policies offered by some of the companies or to take insurance with the state. This probably cannot be settled until the law goes into effect, when the state insurance scheme will take definite shape. There has been some talk of the formation of mutual insurance companies, which might be able to furnish insurance at somewhat lower cost than the private companies now operating, but so far nothing definite has been done in this direction.

J. E. O'Mara has the contract for plumbing a Class C building on Pine Street near Van Ness Avenue.

It is announced that plans for the plumbing, electric work, heating and ventilating in the new San Francisco city hall will be completed within the next ten days. This will be one of the largest jobs, if not the largest, of the year, and contractors in the various departments are naturally taking a keen interest in it. Arrangements have not yet been made for the construction on the Civic Center site of the municipal opera house, for which money has been raised by the Musical Association of San Francisco, but it is believed that the work will be carried out.

The General Engineering Co. has two contracts, aggregating $3,194, for hot water heating systems in the Sacred Heart Academy buildings.

A large job now coming up for figures is the Clift Estate hotel, containing 300 rooms.

The contract for the municipal auditorium taken by F. W. Snook, formerly mentioned as covering plumbing, heating, etc., covered only the former item. The contract for heating and ventilating has been placed with the Atlas Heating & Ventilating Co., at $54,977.

Other Cities in the State.

Carl Leonhardt, of Los Angeles, has let contract for plumbing and heating in a 12-story building on South Spring Street, in that city, to Guereio Bros., on a figure of $43,000.

C. M. Smith has purchased the plumbing business at 424 Angelus Street, Los Angeles, which was formerly conducted by E. C. Hayes under the name of the Smith-Hayes Plumbing Co.

Thomas McGuire and Edward Jennings have opened a plumbing and tinware business at Oxnard, Cal.

Quite a lot of important work is now being figured on, in Los Angeles and vicinity. Contracts are to be let for a six-story building, to cost $160,000, on Los Angeles Street between Eighth and Ninth, and the Los Angeles Fireproof Building Company announces that it will soon build a 14-story hotel in the vicinity of Sixth and Broadway. A good sized job is also in prospect on the First Methodist Church, for which architects Austin & Pennell are drawing plans.

The lowest bids for heating and ventilating in the new hall of records at Mercer, Cal., were submitted by the Pacific Blower & Heating Co. The figures were $2,800 for steam heating and $2,136 for hot air.

F. C. Anglus, a plumber of Centerville, Cal., has sold out to Coit & Lucio.

R. W. Gray of Chico, Cal., has sold a half interest in his plumbing business to G. S. Hall.

Thomas B. Hicks, a contracting plumber of Santa Barbara and Los Angeles, Cal., has filed a voluntary petition in bankruptcy.

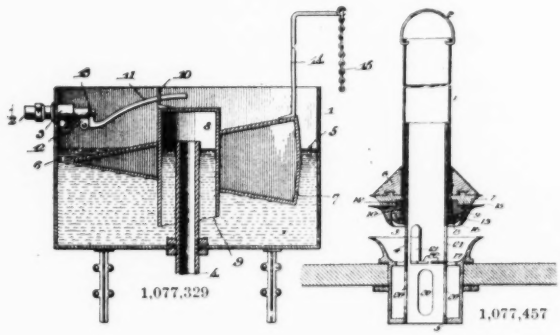
The firm of Bagin & Glass has succeeded J. R. Glass, a plumber and stove dealer of Susanville, Cal.

H. G. Welch has succeeded K. L. Hall in the plumbing business at Eugene, Ore.

Patents

Plumbing Department.

1,077,329. Flush-Tank for Water-Closets. Daniel Cabral, Guadalajara, Mexico. In a flushing apparatus, the combination with a tank having a supply pipe connected thereto, of a flushing pipe extending into the tank, a triangular float having its narrow end pivoted to the wall of the tank, a hollow member secured to and extending through the float, and surrounding the upper end of the flushing pipe, said hollow member having an angular sheared bottom, a rod connected to the upper free end of the float and extending above the tank and having a lateral extension, a chain connected to the lateral extension for depressing the free end of the float, a supply valve connected in the supply pipe above the hinging point of the float, an operating lever therefor, and an apertured lug connected to the hollow member and adapted to freely receive said operating lever whereby when the float is depressed the lever will be operated to open the valve.



1,077,329

1,077,457

1,077,457. Valve for Flush-Tanks. Edward L. Delany, New York, N. Y. In a flush-tank valve, a two part valve element, and a washer having a shoulder held between said parts and having a lateral portion extending outward between said valve parts and formed with substantially horizontal and depending pliable tapering extremities, said depending portion being spaced apart from said valve, in combination with a valve seat of formation corresponding to that of the extremities of said washer, whereby said horizontal portion of said washer is normally immersed and said depending portion is immersed only when said valve is open.

1,077,473. Water-Supply System. Timothy F. Hornung, Sacramento, Cal. In an apparatus for the described purpose and in combination with a water distributing channel, a water pressure accumulator provided with an outlet opening for controlling the water to a lateral, a water supply connection between the distributing channel and the accumulator for introducing water thereinto from the distributing channel, a spillway within the accumulator and provided with an inlet opening disposed in a plane above the outlet formed in said accumulator, a return connection between the spillway and the distributing channel for the discharge of the waste water from the accumulator into the distributing channel, and an overflow barrier extending across said channel between said supply and return connections, the upper edge of said

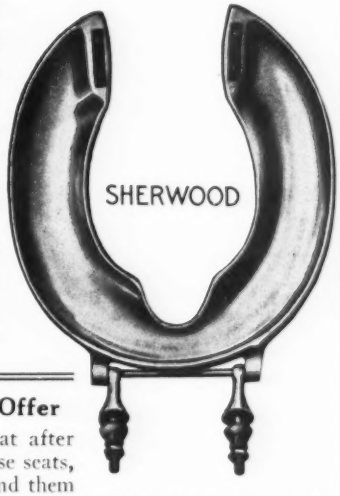
"Sherwood" Polished Aluminum Seats

EVERLASTING

Absolutely Sanitary

The Unqualified Choice of Many Architects and Sanitary Engineers.

We cordially invite every Plumber to write us for prices and descriptive literature.



Introductory Offer

As we know that after you have seen these seats, you will recommend them to all your customers, we will send you via parcel post, one (and only one) seat, at one-half regular price.

Write today, to

SHERWOOD BRASS WORKS

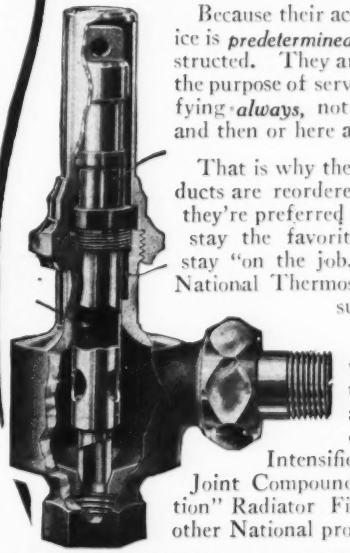
1167-1175 Jefferson Ave., East

Largest Mfrs. of Aluminum Tanks and Seats in the World

Detroit, Mich.

NATIONAL VALVES

Why National Valves?



Because their accurate service is *predetermined* when constructed. They are built with the purpose of serving and satisfying *always*, not merely now and then or here and there.

That is why the National products are reordered; that is why they're preferred over others and stay the favorites because they stay "on the job." Ask us why National Thermostatic Valves are superior to others.

Our literature will be sent free upon request, also bearing on our "B" Heat Intensifier, "B" Pipe Joint Compound, "Perfection" Radiator Fitting and other National products.

NATIONAL STEAM SPECIALTY CO.

9-10 S. Clinton St., Chicago

Surplee, Dunn & Co., 74 Murray St., New York

What the Plumbers Have Been Waiting For

THE RIGHT COMBINATION OF QUALITY AND PRICE

There are two things that every plumber considers when he buys brass goods. He wants quality, and at the same time he doesn't want to pay fancy prices.

The Columbia way of selling brass goods makes it possible for any plumber and steamfitter to buy high grade brass goods at low prices—at the prices that he would ordinarily pay for cheap and shoddy brass goods.

And every plumber is protected in buying Columbia goods. We unconditionally guarantee them in every way. We put the highest percentage possible of pure lake copper in our goods, which gives all Columbia goods an exceptionally fine finish. We test them thoroughly before they leave factory, and they are inspected again before shipped. We leave no stone unturned to make sure that our customers get the very best of brass goods. Ask your plumber, who is using Columbia brass goods. There is one in your town. We sell only to the Plumbing trade.

And at the same time our prices are rock bottom—fully 15% to 25% less than ordinary. These prices are possible because we have no salesmen and we sell for cash. This eliminates selling expenses and losses due to bad accounts, items that every other manufacturer has to tack on to the price of his goods.

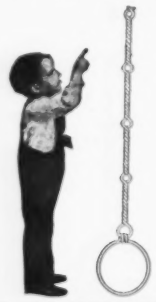
The Columbia Catalog, with net prices, tells you all about our plan and makes it easy for you to order. There is a copy waiting for you. Send for it today. It means that you will save from 15c to 25c on every dollar you spend for brass goods. Tear out this ad and write your name on the margin. We will send you the catalog.

PLUMBERS & STEAMFITTER'S BRASS GOODS

COLUMBIA BRASS CO.

DETROIT—MICHIGAN.

DAD PIPE HANGER



DAD says, it's equal to the best at less than half the price of other Hangers, and if you don't find it so ship it back and he'll pay the freight both ways.

Cheapest and simplest hanger on the market.

Easily adjusted. Durable. Efficient.

If your jobber cannot supply you, write us.

D. A. DONOVAN

Auburn, N. Y.

The MURDOCK

Self Closing Hydrant

Works under any regular pressure

Every Genuine MURDOCK is thoroughly tested before it leaves us.

They are made with a heavy phosphor bronze spring which insures positive action at all times.

Always working, winter and summer because it is absolutely frost-proof.

If you want a satisfied customer and a self-closing hydrant that requires no attention after installation, be sure it is a GENUINE MURDOCK bearing our full name and label.

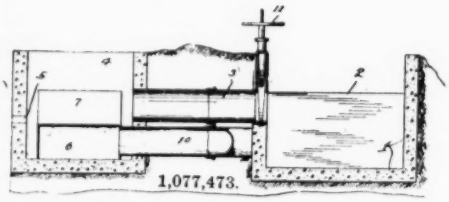
Send for further information.

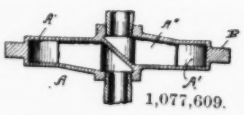
The Murdock Mfg. & Supply Co.

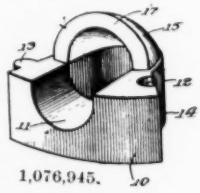
Cincinnati, Ohio

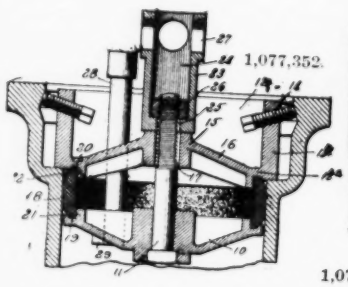
barrier terminating at a point below the upper edge of said channel and approximately level with said spillway.

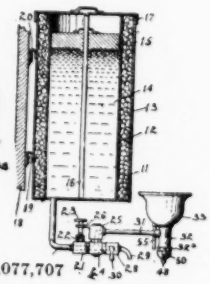
1,077,609. Water-Heater. Joseph F. Jones, Cleveland, Ohio, assignor to The Porcupine Water Heater Company, Cleveland, Ohio, a Corporation of Ohio. In a water heater, the combination of a series of suitably connected sections, each section including an annular chamber, a single diametrically extending hollow bar opening at its ends into the annular chamber, the bar being provided intermediate its ends with alined inlet and outlet openings, an inclined partition within said bar separating the inlet and outlet openings, the annular chamber being unconnected with the inlet and outlet openings except through the respective portions of said bar, a series of solid baffling bars extending across the open spaces between the hollow bar and the annular chamber, and a series of radially outwardly extending lugs attached to said section around the outside of the same.











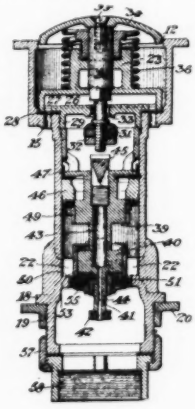
1,076,945. Catch Basin. Edward C. Brown, Chicago, Ill. A catch basin having an outlet, a substantially vertical wall of arcuate form having its ends secured to the wall of the catch basin, the lower edge of said wall lying in a plane beneath said outlet, and a top portion of arch shape seated on the upper edge of said wall and having an interlocking connection therewith, said arch portion having its rear side shaped to engage the wall of the catch basin at the upper side of said outlet.

1,077,352. Pipe-Testing Plug. Clarence M. Kemp and Charles E. Kemp, Baltimore, Md., assignors to C. M. Kemp Manufacturing Co., Baltimore, Md., a Corporation of Maryland. A testing plug for pipes comprising a pair of compression heads of different diameters, one of which is adapted to enter the bore of a pipe and the other to remain outside the same, a resilient packing sleeve between said heads, a threaded stem fixed in the inner head and projecting freely through an opening in the outer head, an elongated tightening member adapted to project beyond the end of the pipe when the plug is ap-

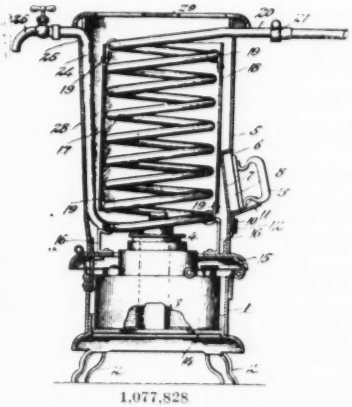
plied for rotating the same, through which member said stem freely passes, a deep pocket of polygonal cross-section in the outer end of said member, and a polygonal nut threaded on said stem longitudinally slidable within said pocket but rotatable with said member when the latter is turned for drawing the heads together.

1,077,707 Drinking-Fountain. August H. Hartman, Stamford, Conn. In a drinking fountain, in combination with a pipe communicating with a source of water supply and having a valve therein, a valve-controlled discharge nozzle, a pipe connection between said nozzle and the supply pipe, and means connecting said nozzle pipe and the valve in said supply pipe, whereby the nozzle will be locked in operative position.

1,077,745. Flush-Valve. Abram N. Pasman, Jersey City, N. J. In a flush valve, a casing having an inlet connection, a discharge opening, and a cylindrical portion, a piston in the cylindrical portion, means permitting the flow of liquid from the inlet connection to the interior of the cylindrical portion above the piston, a release valve, an inlet valve carried by the piston, and means connected to and carried by the piston and also movable independently thereof so that the movement of the same may be continued in the same direction after the piston has reached the end of its forward stroke, for gradually and positively shutting off the flow of water from the inlet connection to the discharge opening.



1,077,745.



1,077,828

1,077,828. Water-Heater. Jane E. Gillespie, Atlanta, Ga. In a water heater, the combination with a drum-supporting base, and an oil font and burner contained therein, of a cylindrical drum extending upwardly from and supported upon said base, a removable inside drum having an outside diameter less than the inside diameter of the outside drum, brackets extending upwardly from and fastened to the base, and a water coil fastened to the interior of the inside drum and having its bottom convolution supported on said brackets, one end portion of said coil standing upright upon the exterior of the inside drum, and both ends of the coil extending laterally over the top of the outside drum, whereby the inside drum and attached coil are both removable through the top of the outside drum.

1,078,104. Foot Attachment. William C. McKinney, Toronto, Ontario, Canada, assignor to Standard Sanitary Manufacturing Company, Pittsburgh, Pa., a Corporation of New Jersey. The combination of a cast-metal article provided on its outer surface with lugs forming a tapered recess, a supporting member provided with a tongue adapted to fit into said recess and to extend beyond the ends of said lugs, a slotted stop element ad-

The Crawford Combination Bath Trap

Simplifies the installation of a bath tub to a minimum.

Attaches directly to the tub comprising a trap, waste and overflow all in one fixture.

Has 2⅜" water seal.

Elbow may be furnished on outlet instead of union.

Saves time and money and adds to the appearance of the bathroom.

Prices on application.

Crawford Specialty Co.

115 Dartmouth St. Boston, Mass.

One — Only — One

That's right — there's only one generator—and that's **The Masterpiece** possessing these qualities:

Always retains 10 lbs. pressure.

After discharging reseats at not less than 9 lbs. thus losing no heat already gained.

Perfect, simple, attractive and inexpensive—in short THE MASTERPIECE. Manufactured by

THE WATSON SPECIALTY CO.
Terre Haute, Ind.

Water Tight Connections In Soil Pipe Work

The easiest and best method of making absolutely water tight connections in soil pipe work, is to use

The Sisson Insertable Joint

This joint does away with the old method of springing the stack or removing whole lengths of pipe. With the SISSON it is never necessary to disturb pipe.

R. ESTABROOK'S SONS, South Boston, Mass.

"AMERICAN"
ANTI-SYPHON AND RESEALING TRAPS

Are the best that experienced and competent workmanship can produce

FROM AN ARTISTIC
AS WELL AS
SANITARY POINT OF VIEW

Deep water seal—over 7". Full waterway. Ground joint at outlet. Artistic in design. Superior in finish. Castings smooth inside and out.

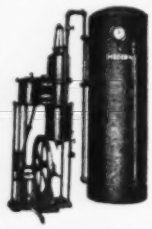
AMERICAN SANITARY MFG. CO.
ABINGDON, ILL.

MASTER PLUMBERS

No matter what the requirements of the country and suburban home, there is a

CALORIC NOISELESS ENGINE

adapted for the work.



Because of its safety, simplicity and lack of noise, the "Caloric" is suitable for use in the home for pumping purposes.

Makes no more noise than a big clock.

The "Caloric" is in a class by itself for pumping water.

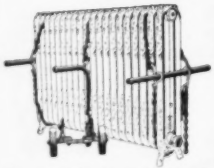
Price extremely reasonable.

You can make good money handling the "Caloric" in your locality.

Write for Catalog "C" and our agents proposition.

THE BREMEN MANUFACTURING COMPANY, Bremen, O., U.S.A.

The Steamfitter's Best Friend



To easily and quickly get that large radiator up and down narrow crooked stairways and halls, you need

BUELL'S COMBINED CARRIER AND TRUCK

This carrier is strong, **adjustable** and durable—saves labor, time and strength, and pays for itself on the first job.

Write for details and prices.

BUELL BROTHERS, Fulton, N. Y.

A Slight Pressure *That's ALL!* **The Horigan Aqua**

Expansion Tank meets all requirements in hot water heating. No other expansion tank is needed. It eliminates pipes running to top floor or attic.

The Horigan Aqua exerts a slight pressure on the system, the gauge being set at 20 to 30 pounds at which point it relieves the system.

Out of the Way

Is placed in cellar, or basement, alongside the boiler. No mains larger than 2 inch. No risers over ½ inch and ¾ inch.

Send for Circular.

HORIGAN SUPPLY CO.,

400 S. 4th St. ST. JOSEPH, MO.

Weighs no more than a pair of boots,

but it's tested to a load of 1000 lbs.
A very low-priced adjustable boiler stand for boilers of any make, 30, 35 or 40 gals. **No bolts.** Weight, about 5 lbs. Height, 13¼ inches. The fitter will appreciate large space under boiler. Lots of 100 or more? Get jobber's prices.

C. H. FOSTER

14 Princeton Ave., St. Louis, Mo.

ALWAYS UNIFORM

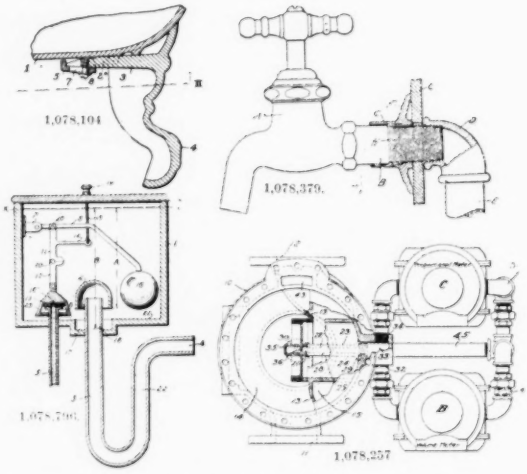
MJW MODERN MJW

SPECIALTIES

Modern Iron Works, Quincy, Ill.

justably secured to the end of said tongue and provided with wings abutting against the ends of said lugs, and a securing member extending through said slot and engaging said tongue.

1,078,379. Faucet Attachment. Joseph Regar, Cleveland, Ohio, assignor to The Regar Company, Cleveland, Ohio, a Corporation of Ohio. The combination, in a faucet cock or bib, of a shank having a tapered male thread at the end portion of the shank and a straight male thread on an intermediate portion and a collar having a straight threaded opening adapted to coact with the straight threads on the shank, the straight threads on the shank extending for a considerably greater distance than the threads on the collar, whereby the collar may stand on the straight thread of the shank in advance of the rear end of such thread, and a cylindrical flange on the forward side of the collar adapted to extend over the threads on the shank in front of the engaging portion of the collar, irrespective of the position of the collar on such threads.



1,078,796. Flush Tank. Harmon De Leon Moise, Sumter, S. C. In a flushing device, the combination with a tank provided with a water supply, a normally closed controlling valve for the water supply, a lever pivotally mounted in the tank and having a pivotal link connection with the valve, an arm projecting from the link connection with the valve, an arm projecting from the link connection, manually operated means engaging the arm and adapted to distort the link connection to open the valve, and means for causing the lever to automatically restore the link connection to normal position to close the valve.

1,078,257. Meter. Horace Chrisman, Edgewood Park, Pa., assignor to Pittsburg Meter Company, a Corporation of Pennsylvania. The combination of a casting, a proportional meter, pipes leading from the casing to the inlet and outlet of said proportional meter, a volume meter, pipes leading from the inlet and outlet of the volume meter to the casing, independent chambers for the respective meters in the casing, a rectangular slide valve for closing communication between the outlet of one meter and the outlet of the casing and simultaneously opening communication between the inlet of the outer meter and the inlet of the casing, and means for operating said valve.

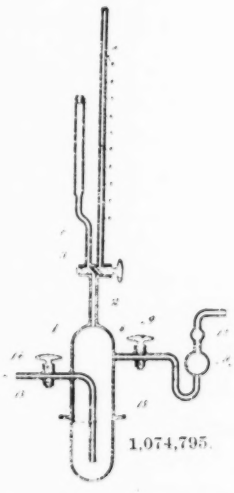
1,078,791. Soldering Stick. Ludwig Maes, Bonn, Germany, assignor to Kupper's Metallwerke Gesellschaft mit beschrankter Haftung, Bonn, Germany. A soldering stick

consisting of a casing of soft solder with a filling of a paste-like soft solder material which contains metallic soft solder in a finely divided state, said filling combining with the casing to close the casing and confine the filling upon removal of the soldering heat.

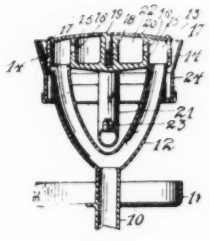
Lighting Department.

1,074,795. Gas Testing Apparatus. Einer Johnson, Minneapolis, Minn. A gas testing apparatus comprising a main bulb having an upwardly extended tube and two burettes connected to the upper end thereof, a valve for closing the lower ends of said burettes and for connecting the same, at will, to said tube, a valved tube extending into said main bulb, and downward within the same, and another valved tube extending from the upper portion of said main bulb and provided with a U-shaped downward bend adapted to serve as a seal.

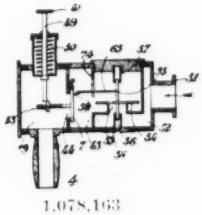
1,074,866. Gas Burner. Carl A. Johnson, Jamestown, N. Y. In a liquid fuel burner, a cast metal top having a circular partition therewithin to form an outer generating chamber and an inner distributing chamber and passages therebetween, a central standard within said distributing chamber, a sheet metal disk engaged beneath the outer rim of said top and held at the center by a screw in said standard to close said chambers, a V-shaped pipe connected to the opposite sides of said generating chamber, a supply pipe connected to said V-shaped pipe, a fuel cup on said supply pipe beneath said burner, a shield attached to said V-shaped pipe on its outer sides and extending up a spaced distance around said burner, a second V-shaped pipe connected to the opposite sides of said distributing chamber and extending down therefrom within the first V-shaped pipe, and a gas nozzle within said second V-shaped pipe on its upper side, substantially as and for the purpose specified.



1,074,795.



1,074,866



1,078,163

1,078,163. Safety Device for Gas Supply Apparatus. Germain Frederic Picot, Paris, France. Safety valve mechanism comprising a casting through which the medium to be controlled flows, an inlet and outlet in said casing, a counter-balanced valve therein, said valve adapted to automatically close when the pressure of the medium at the inlet end of the casing exceeds to a predetermined extent that at the outlet end but adapted to remain open when said pressures are equal, and means interposed in the path of the incoming medium and operable when the flow of medium ceases to close said valve.

Saving Money is a Habit

No. 82 Torch
Price Each $4.00 Net

By using C. & L. Fire Pots and Torches you save both time and money. Made of the best materials, by expert skill. It pays to buy the best, thereby saving time and trouble. Every C. & L. Fire Pot and Torch is tested with air and fuel burning, and, if operated in accordance with directions, will give the user splendid satisfaction. All burners are made of special generator metal, retaining the heat longer, and all torch tanks are made of heavy, seamless drawn brass.

Sold everywhere under the maker's guarantee.

All leading jobbers will supply at factory price. Cash must accompany the order if sent to the factory.

Send for Catalog—it's free.

CLAYTON & LAMBERT MFG. CO., Detroit, Mich., U. S. A.

Detroit Valve and Fittings Co.

Manufacturers of

Malleable Iron Fittings and Special Malleable and Grey Iron Castings. Galvanizing and Japanning.

DETROIT, MICHIGAN

Write for Catalogue

The Demand is Increasing Rapidly

No. 63 Trap

For A. D. M. Co.'s high grade, Cast Brass, Deep Seal, and Bent Tube Traps and Wastes. Why not be in position to fill all orders promptly? All stock is beautiful in design and constructed of the best materials by expert skill.

Endorsed everywhere by leading Sanitary Engineers and Inspectors and guaranteed to please.

Your nearest jobber will supply at factory price. Cash must accompany the order if sent to the factory.

Send for Booklet with Discount Sheet —it's free.

A. D. Manufacturing Co., Detroit, Mich., U. S. A.

ESTIMATING RADIATION SIMPLIFIED

My "Table of Estimated Radiation" puts before you, in condensed form, the simple and recognized rules of estimating for steam and hot water heating.

Two tables of figures for radiation—one page of rules and exceptions—all printed on heavy celluloid and bound with cloth—this is yours for $1.00 postpaid.

If it isn't worth the money, your money's ready.

HARRY B. PERRIGO
106 Hobart Street NEW HAVEN, CONN.

Classified Advertisements

Advertisements under this heading 4 cents per word per issue, address included. Send cash with order. To insure insertion copy should be received not later than Wednesday afternoon.

Situations Open.

WANTED—EXPERIENCED TINSMITH and furnace man. Steady job. No booze need apply. Manion & Thomas, Wellsville, N. Y. 11-29, 12-6

WANTED—SALESMAN CALLING ON the plumbing and heating trade in natural gas territory to handle a well advertised line of gas burning heating boilers. Address Box 983, care of "Domestic Engineering," Chicago. 9-13

WANTED—A PRACTICAL PLUMBER, Fitter and Electrician, a man who is competent to manage a shop handling these branches in a town of 2,000 population. References will be required. An excellent chance for the right man. Position will be ready January 1. Address The Larsen & Wood Co., Toledo, Ohio. tf

WANTED—SUPERINTENDENT FOR enameled iron sanitary plant. One who as an executive can build up a first-class working organization, and who has both theoretical and practical knowledge of the foundry and enameling business. The right salary to the right man. Address Box 1037, care "Domestic Engineering," Chicago, Ill. 11-29, 12-6, 13, 20

AGENTS WANTED—AMONG PLUMBers and supply dealers for an exceptional house lighting machine, suitable for small homes as well as large. Simple, durable, economical. Satisfaction guaranteed to customers. Has excellent selling points. A live proposition. Write for terms. The Alexander O. Millburn Co., Baltimore, Md. eow

Situations Wanted.

POSITION WANTED—PLUMBER AND steamfitter, twelve years' experience. Married, sober, good reference. Would like to connect with good firm. T. F. Chaffee, Almena, Kas. 11-29

EXPERIENCED AND PRACTICAL Salesman would represent manufacturer in Chicago territory. Unsurpassed acquaintance with architects and contractors. Can handle heating proposition. Address Box 1032, care "Domestic Engineering," Chicago. 11-15

WANTED—POSITION AT $1,800 PER year. Qualifications: Estimator, draughtsman, inspector, steamfitter, salesman, superintendent, heating and ventilating engineer. References: Am able and expect to confirm above qualifications. L. Rollins, 510 University Ave., N. E., Minneapolis, Minn. 11-29

POSITION WANTED—FACTORY SUperintendent of eighteen years' experience wishes to make a change on or about January 1, 1914. Competent of handling a plant of any size. Brass manufacturing plant preferred. Address Box 1030, care "Domestic Engineering," Chicago. 11-8, 15, 22, 29, 12-6

For Sale.

FOR SALE—SOME SHARES OF STOCK in a concern manufacturing plumbing specialties, the leading one in the line, and one that has always made money. This stock will pay 7 per cent annually. A mighty good investment that is constantly increasing in value. For particulars address Box 1036, care "Domestic Engineering."

WANT A WINTER HOME IN THE South? Five acres in Citronelle, Ala., with good six-room house, lots of fruit. Fine climate—just the place for a good rest. Fine place to start business. $900 buys this place if sold at once. For full particulars address Box 1031, care "Domestic Engineering," Chicago. 11-15, 22, 29.

Miscellaneous.

SELL YOUR SURPLUS COUPLINGS and fittings. Write us. The A. & J. Mfg. Co., 557 W. Lake St., Chicago. tf.

ORDER GOODS, KEEP STOCK AND mark bins. Use the Modern System. Write us. Modern Equipment Co., 3819 Pennsylvania Ave., St. Louis, Mo. 11-29

FOR RENT—OFFICE SPACE OR DESK room. Prefer plumbing specialty man calling on architects. J. R. Williams, 101 Park Avenue, Architects Building, New York City. 11-15, 22, 29

Government Proposals.

TREASURY DEPARTMENT, SUPERVISing Architect's Office, Washington, D. C., November 3, 1913—Sealed proposals will be received at this office until 3 p. m., December 1, 1913, and then opened, for a cooled drinking water system, etc., in the U. S. Post Office, Oklahoma City, Okla., in accordance with the drawing and specification, copies of which may be obtained from the custodian at the building or at this office, in the discretion of the Supervising Architect. O. Wenderoth, Supervising Architect. 11-15, 22, 29

TREASURY DEPARTMENT, SUPERvising Architect's Office, Washington, D. C., November 3, 1913—Sealed proposals will be received in this office until 3 p. m., December 1, 1913, and then opened, for a pumping plant, etc., in the U. S. Post Office, Oklahoma City, Okla., in accordance with the specification and drawing, copies of which may be obtained from the custodian of the building or at this office, in the discretion of the Supervising Architect. O. Wenderoth, Supervising Architect. 11-15, 22, 29

TREASURY DEPARTMENT, SUPERvising Architect's Office, Washington, D. C., November 3, 1913—Sealed proposals will be received in this office until 3 p. m., December 1, 1913, and then opened, for changes in plumbing, conduit and wiring system, and lighting fixtures at the United States customhouse and Post Office, Dubuque, Iowa, in accordance with drawings and specification, copies of which may be had at this office or at the office of the custodian, Dubuque, Iowa, in the discretion of the Supervising Architect. O. Wenderoth, Supervising Architect. 11-15, 22

We Publish

AIR VALVES FOR STEAM HEATING systems. By. W. H. Wakeman, author of "Engineering Practice and Theory." Postpaid, 25 cents.

PRINCIPLES AND PRACTICE OF Plumbing. By J. J. Cosgrove. A complete handbook on this subject. Fully illustrated. Bound in cloth; postpaid, $3.

WROUGHT - PIPE DRAINAGE SYSTEMS. By J. J. Cosgrove. An invaluable aid to those who install iron pipe systems. Bound in cloth; 150 pages; 5¾ x8½ in.; postpaid, $2.

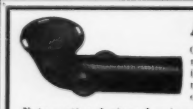
DEAN'S SYSTEM OF GREENHOUSE Heating by steam or hot water; used for years; convenient and reliable; makes greenhouse heating estimating very simple. Flexible cloth bound, 5½x7¾ in., 46 pp. Postpaid, $2.00.

"The Sanitary Sewerage of Buildings," by Thomas S. Ainge. Written in a plain, straightforward way for the master plumber, as well as for his foreman and interested employes. Plumbing tests and sewage disposal are among the subjects treated. Bound in cloth, 196 pages, 5½x8. Price $1.50, postpaid.

Address:

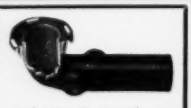
DOMESTIC ENGINEERING

445-447 Plymouth Court, Chicago



E. J. C. Closet Bend

Conforms with codes of nearly every city and state in the U. S. A. Recommended by master plumbers as a TIME SAVER.



Note sectional view showing thread which grasps calking and prevents expansion of contraction. Note also adjustment feature. Get a good bend at a surprisingly low price. Write for sample.

MICHIGAN FOUNDRY AND SUPPLY CO. DETROIT, MICH.

All The Good Features Of "NATIONAL" PIPE Are Brought Out In N. T. C. Bulletin No. 12

NATIONAL

These appear under the following headings: "National Pipe," "Uniformity," "Chemical Composition," "Physical Properties," "Bursting Strength," "Threading," "Improvements," "Full Weight Pipe," "Spellerizing," "Corrosion," "Tests" and "Specifications." Read the double page announcement which will appear in "Domestic Engineering" December 6th issue.

NATIONAL TUBE COMPANY, Pittsburgh, Pa.

UTICA SOIL PIPE IS THE BEST

CAST IRON SOIL PIPE and FITTINGS
CAST IRON STEAM FITTINGS
PLUMBING SUPPLIES and LEAD PIPE

CHARLES MILLAR & SON CO., Utica, N. Y.

Dollar Back Wiping Clamps

Write us about them

GRIFFIN SPECIALTY CO.

506 West 26th Street New York City